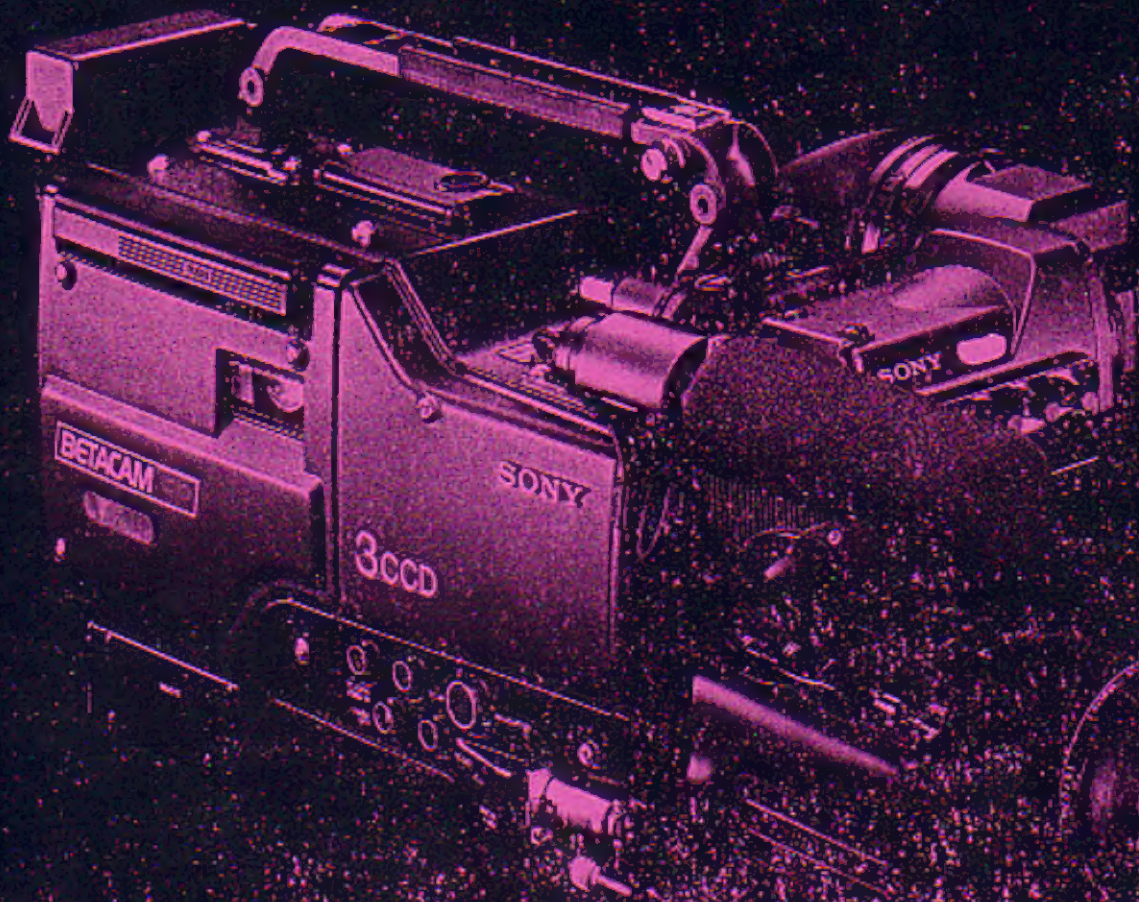
NTSC

BETACAM

BVW-300A

Betacam SP VTR-in-Camera Combo



Sony Broadcast

- The viewfinder position is adjustable front to rear as well as sideways.
- If you fit a BKW-401 viewfinder rotation bracket (not supplied), then when carrying the unit by the grip you can quickly fold the viewfinder away so that it doesn't keep hitting your leg.
- The unit can easily be operated using your left eye for the viewfinder, by fitting a left-eyed shooting slide guide (Part No. A-7612-381-A, not supplied).
- Fitting a fog-proof filter(Part No. 1-547-341-11, not supplied), prevents breath or vapor condensation.

Automatic adjustment of black balance and white balance and memory functions

A simple switch operation allows automatic adjustment of the black set, black balance and white balance. The adjustment settings are saved in memory, and retained when the power is turned off, so it is not necessary to make the adjustments every time the unit is powered on.
There are two sets of memory for white balance, and each can hold four settings, making a total of eight. When you select the setting appropriate for the lighting conditions, the camera automatically adjusts to the white balance saved in memory. The unit also has preset white balances corresponding to color temperatures of 3200 K and 5600 K, which can be used when there is no time to make an adjustment.

VTR operation warnings

Warning lamps and a warning sound are provided to inform you of VTR faults, end of tape or battery low.
The viewfinder also shows the tape running time remaining and battery voltage.

Character display functions

The viewfinder can display switch settings, black and white balance adjustment information, warnings, and camera and VTR errors.

Automatic iris closing mechanism

The iris of the lens automatically closes under the following conditions:

- When the built-in color bar signal generator is operating.
- During automatic black balance adjustment.
- When the built-in saw-tooth waveform generator is operating.

Color bar generation

A built-in circuit produces a color bar signal as follows to allow easy color monitor adjustment.

- BVW-300A: an SMPTE type color bar signal (excluding signals I and Q) will be generated.
- BVW-300AP: the EBU standard color bar signal will be generated.

Designed for high image quality

This unit is designed to exploit the high performance CCD to get the very best possible image quality.

- Built-in DCC (Dynamic Contrast Control) circuit allows a wide dynamic range up to six times normal brightness.
- Built-in two line image enhancer.
- Built-in shading compensation circuit for when the lens extender is used.
- R/G mixing detail circuit gives improved color resolution.
- Built-in saw-tooth waveform generator for adjustment.
- A zebra pattern generator provides a video level display.

Audio functions

- A phantom feed gun-directional microphone is fitted as standard. It can also be detached and used as an interview microphone.
- A microphone other than that supplied can also be connected as an external microphone, and can be attached to the unit using a CAC-12 microphone holder (not supplied).
- The recording level on audio channel 1 can be easily adjusted from the front of the unit.

Recording with an external VTR

When connected to an external VTR such as the BVW-35/35P/25/25P with a CCRZ-5 cable (not supplied), the external VTR can be used for recording a composite video signal instead of the internal VTR.

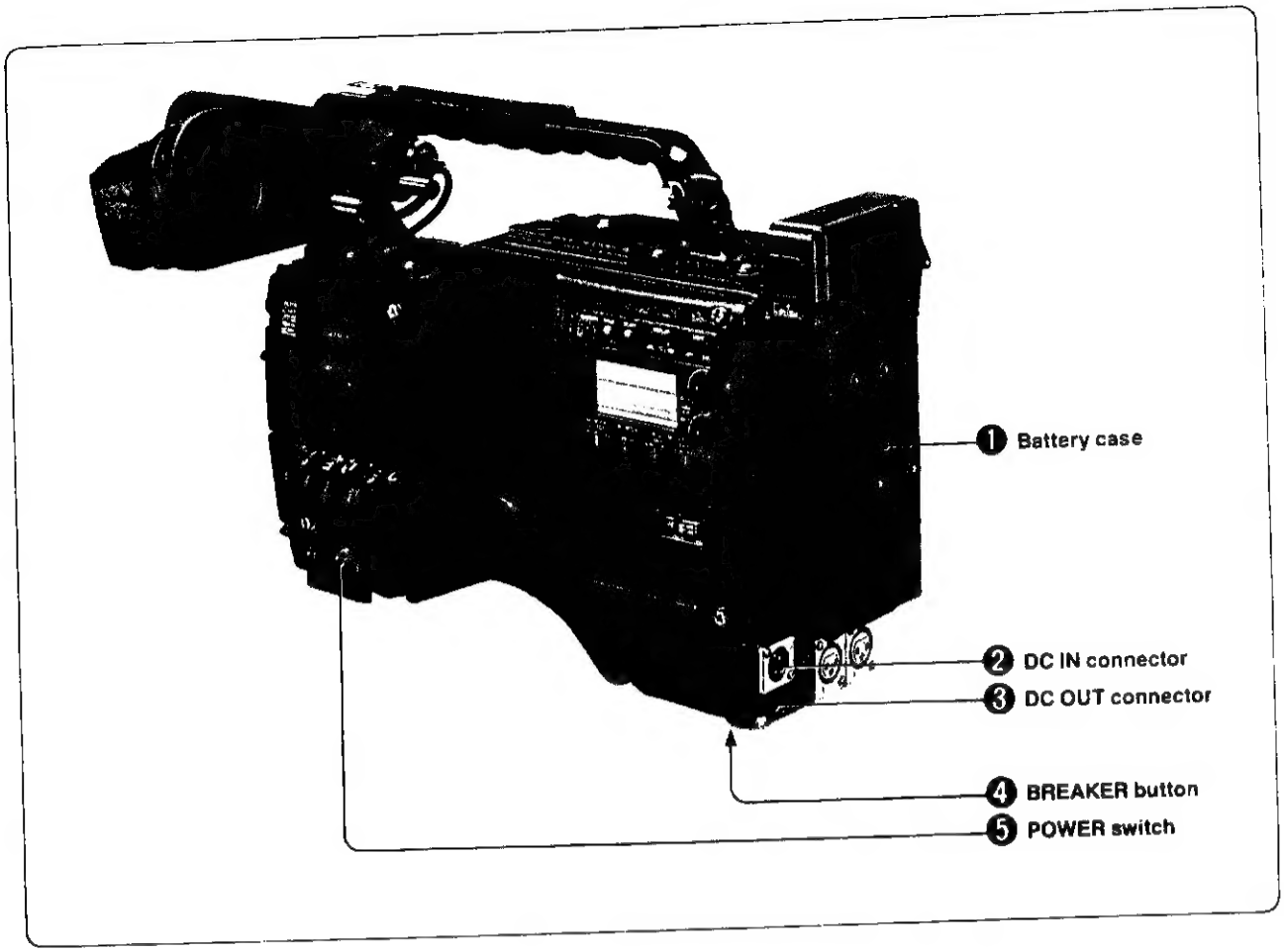
Simultaneous recording on external and internal VTRs

By fitting a BKW-402 VTR connector unit (not supplied) and connecting an external VTR such as BVW-35/35P/25/25P with a CCZ cable (not supplied), you can record component video signal simultaneously on the external and internal VTRs.

Remote control

If an RM-P3 remote control unit (not supplied) is connected, some of the camera functions can be remotely controlled.

2-1 Power Supply



❶ Battery case
Insert an NP-1B/NP-1A battery pack (not supplied).

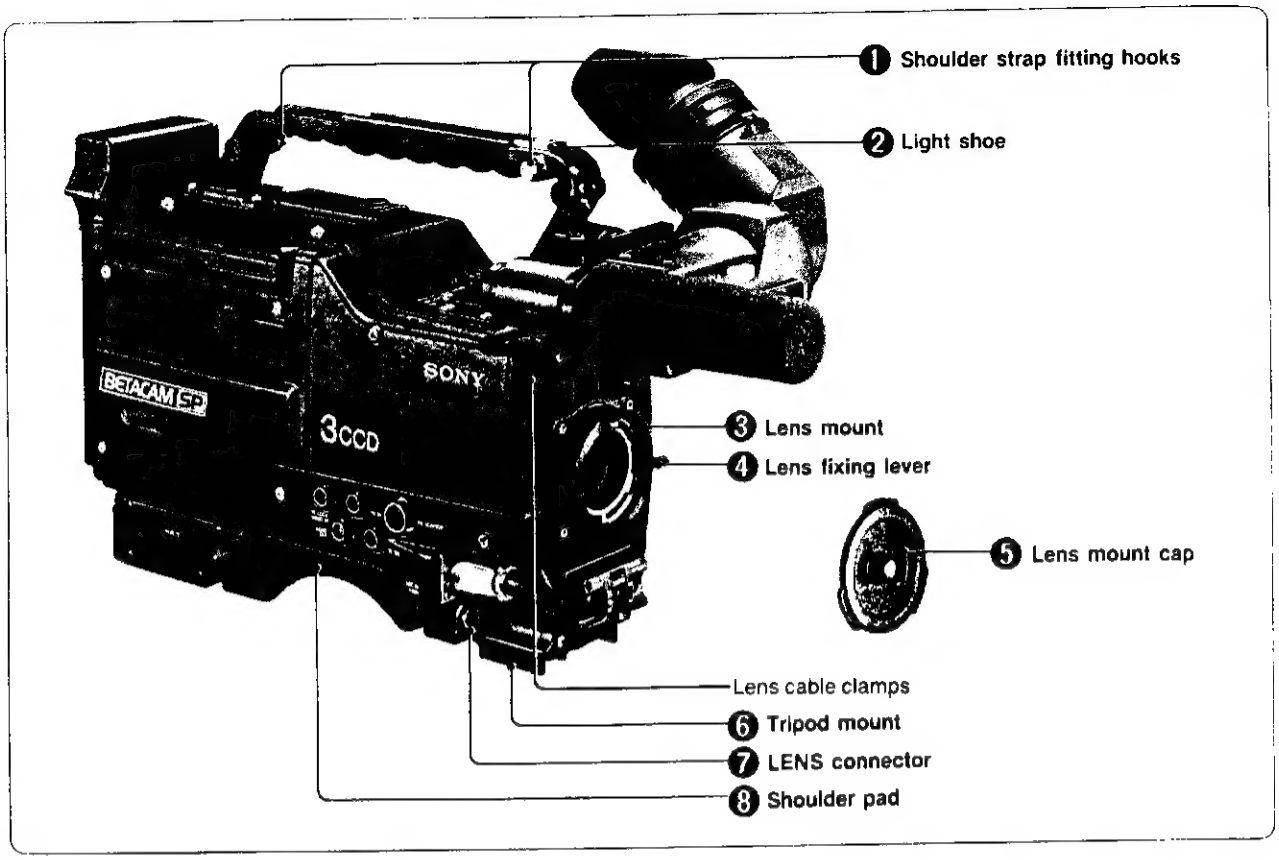
❷ DC IN (external power supply input) connector (XLR type, 4-pin, male)
To use the unit with an AC power supply, connect an AC-500/500CE AC adaptor(not supplied) using by the DC output cord supplied with the adaptor.
To use an external battery, connect its DC output cord to this connector.

❸ DC OUT (DC power supply output) connector (4-pin)
Supplies power for a WRR-28L UHF portable tuner (not supplied). Do not connect anything other than a UHF portable tuner to this connector.

❹ BREAKER button
If an excessive current flows in the internal circuitry whatever the cause may be, the internal circuit breaker will trip, and the power is automatically cut off. Check that there is no continuing fault, then press this button in. Normally the power will come on again.

❺ POWER switch
This turns the main power supply on and off.

2-2 Accessory Attachments



❶ Shoulder strap fitting hooks
Attach the shoulder strap (supplied) to these hooks.

❷ Light shoe
For attaching a video light etc.

❸ Lens mount
Special bayonet type lens mount.

❹ Lens fixing lever
After inserting the lens in the lens mount ❸, rotate the lens mount ring with this lever, to fix the lens in position.

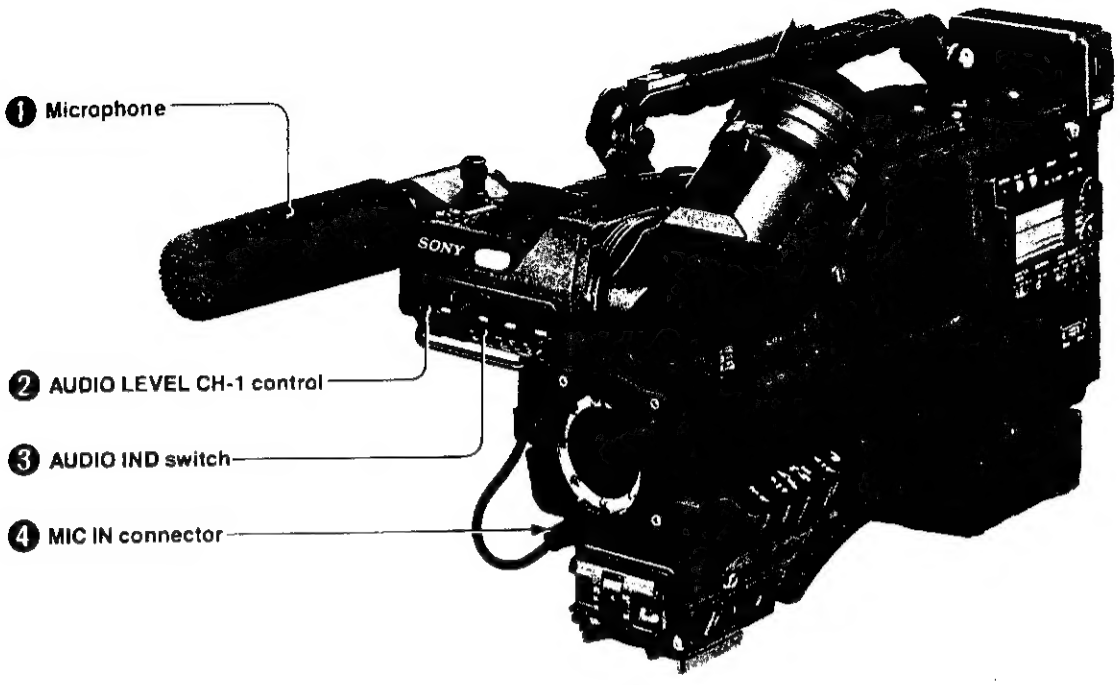
❺ Lens mount cap
Remove by pushing the lens fixing lever ❹ up. Always insert this cap for protection from dust when there is no lens mounted.

❻ Tripod mount
Fit the tripod adaptor supplied in order to use the unit on a tripod.

❼ LENS connector (12-pin)
Fit the lens cable to this connector. Contact your Sony representative for more details about the lens you are using.

❽ Shoulder pad
You can adjust the position front to rear of the shoulder pad by loosening the two screws. Do this to ensure the best balance when shooting with the camera on your shoulder.

2-3 Audio Functions

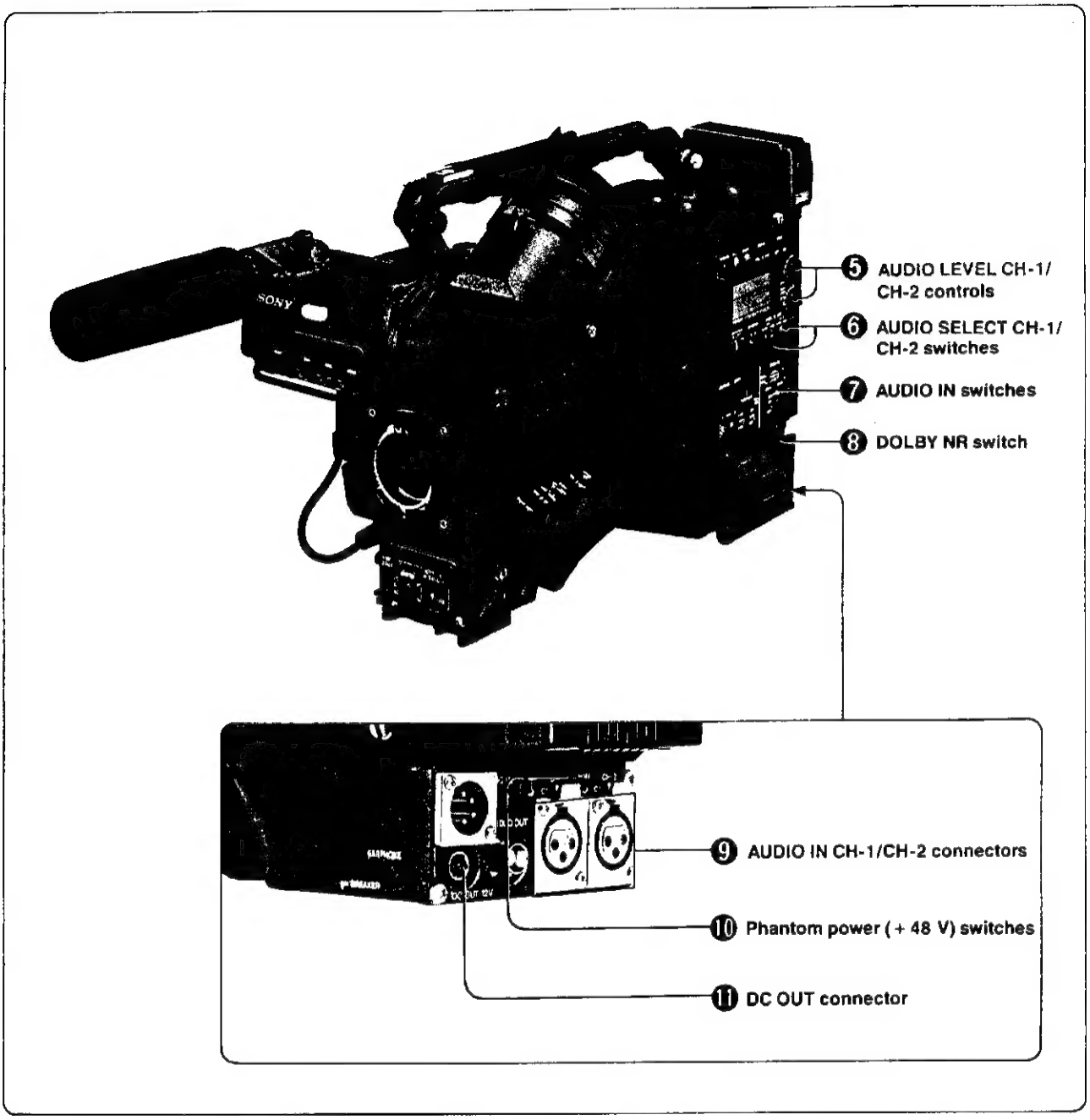


❶ Microphone
The microphone is a phantom power supply, gun-directional type. You can detach it from the unit for use as an interview microphone.

❷ AUDIO LEVEL CH-1 (audio channel-1 recording level) control
When the AUDIO SELECT CH-1 switch ❻ is set to MAN, this control adjusts the recording level of audio channel 1. If the AUDIO IND switch ❸ is on, you can watch the audio level display in the viewfinder while making level adjustments.
You can use this control in conjunction with the AUDIO LEVEL CH-1 control ❺ on the side panel.

❸ AUDIO IND (audio channel-1 recording level indicator) switch
This on/off switch determines whether the channel-1 audio recording level is displayed on the viewfinder screen. When recording it also determines whether the amount of tape remaining is displayed.

❹ MIC IN (microphone input) connector (XLR type, 3-pin, female)
The microphone supplied connects to this connector. You can connect a microphone other than that supplied as long as it is a phantom power supply type. The connector supplies power (+48 V) to the microphone.


5 AUDIO LEVEL CH-1/ CH-2 controls
6 AUDIO SELECT CH-1/ CH-2 switches
7 AUDIO IN switches
8 DOLBY NR switch
9 AUDIO IN CH-1/CH-2 connectors
10 Phantom power (+ 48 V) switches
11 DC OUT connector

❺ AUDIO LEVEL CH-1/CH-2 (audio channel-1 and channel-2 recording level) controls
These controls adjust the audio level of channels 1 and 2 when you set the AUDIO SELECT CH-1/CH-2 switches ❻ to MAN.
You can use the CH-1 control in conjunction with the AUDIO LEVEL CH-1 control ❷ at the viewfinder front.

❻ AUDIO SELECT CH-1/CH-2 switches
These switches set the audio level adjustment for channels 1 and 2 to manual (MAN) or automatic (AUTO).

❼ AUDIO IN (input) switches
These switches select the audio input signal for audio channels 1 and 2. The input signal source is as follows:

FRONT [MIC]: The microphone connected to the [MIC] IN connector ❹.

REAR [MIC]: The microphone connected to the AUDIO IN connector ❾.

REAR [LINE]: The line input signal connected to the AUDIO IN connector ❾.

❽ DOLBY NR (Dolby noise reduction) switch
When oxide tape is used, this switch controls whether to use the Dolby noise reduction system for record/playback. When using metal tape, the Dolby noise reduction system is always on, regardless of the setting of this switch.

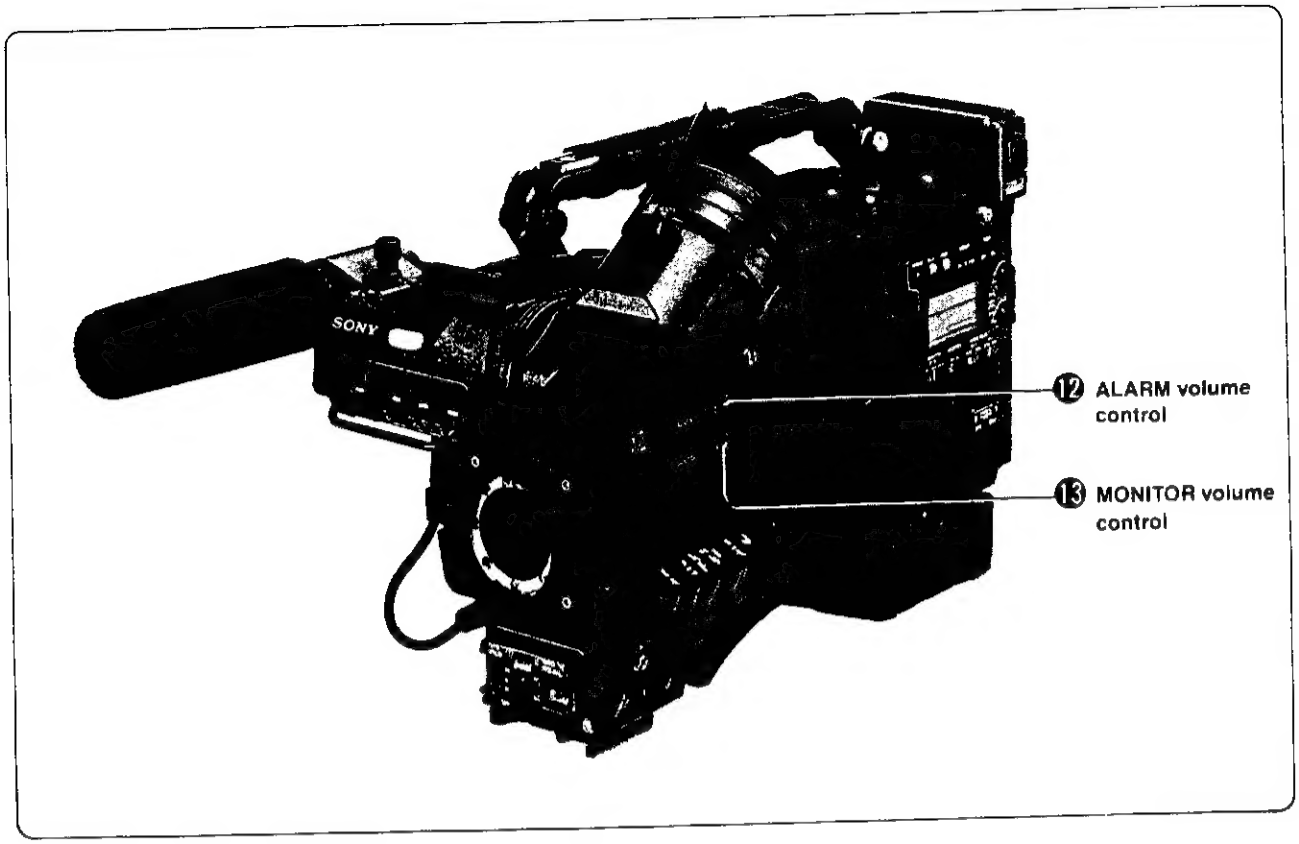
❾ AUDIO IN (input) CH-1/CH-2 connectors (XLR type, 3-pin, female)
These are the audio input connectors for channels 1 and 2, to which you can connect a microphone or other audio device.

❿ Phantom power (+48 V) switches

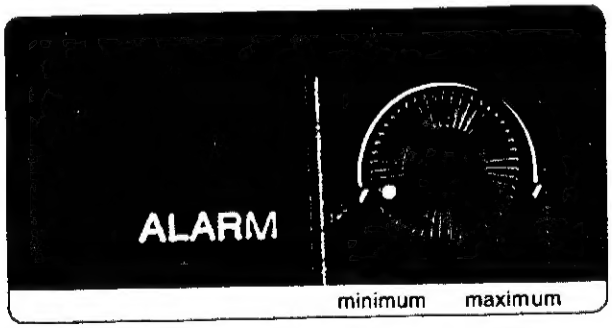
ON: When connecting a phantom feed type microphone to the corresponding AUDIO IN connector ❾, choose this position.

OFF: When connecting a different type microphone to the corresponding AUDIO IN connector, choose this position.

⓫ DC OUT (DC power supply output) connector
Supplies power for a WRR-28L UHF portable tuner (not supplied). Do not connect anything other than a UHF portable tuner to this connector.



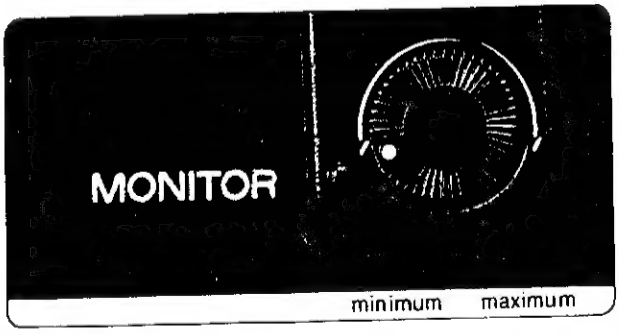
⑫ ALARM volume control
This control adjusts the volume of warning sounds from the speaker ⑭ or earphone connected to the EARPHONE jack ⑰. At the minimum position the alarm cannot be heard at all.

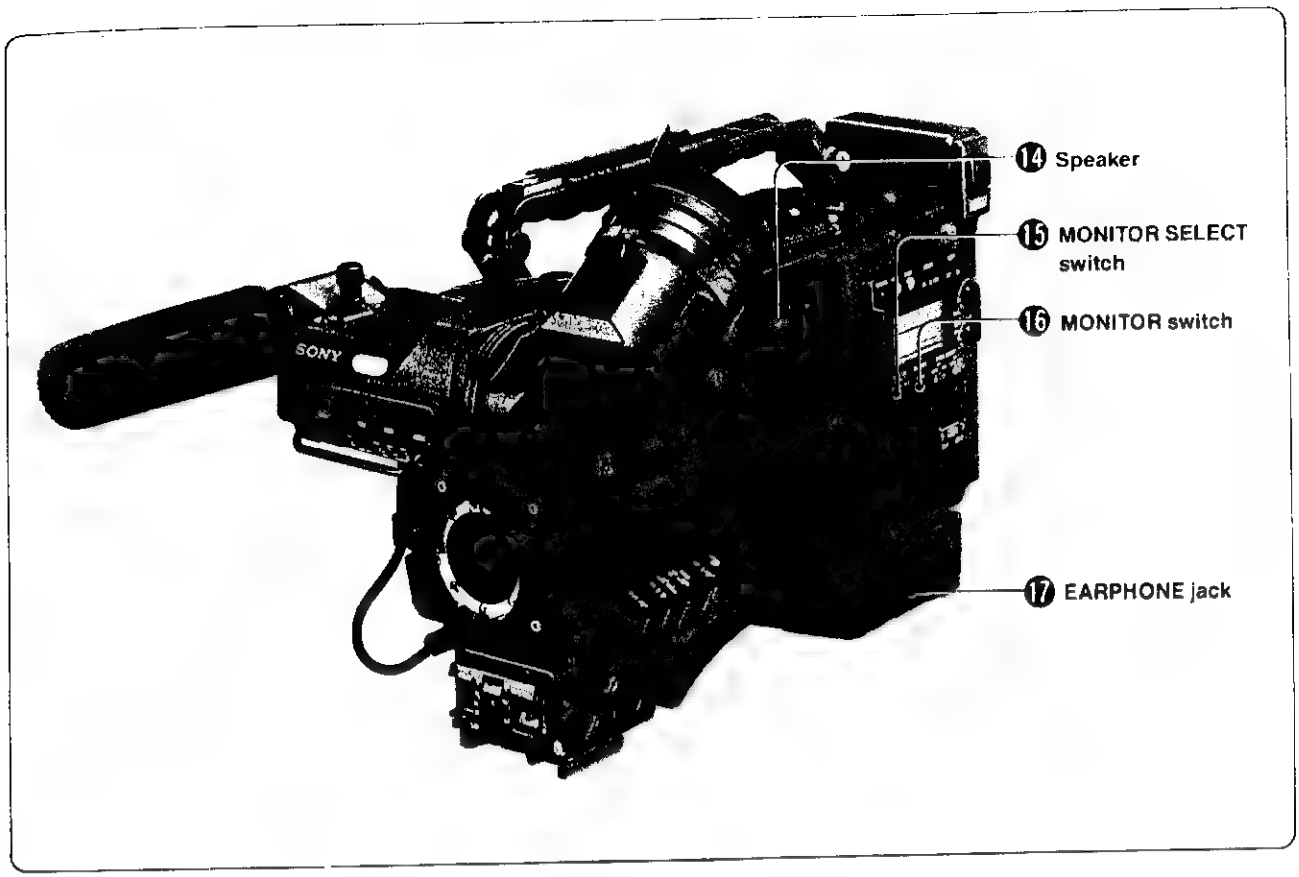


You can adjust the internal volume control so that the alarm is audible even at the minimum setting of this ALARM volume control.

Refer to the maintenance manual for details.

⑬ MONITOR volume control
This control adjusts the volume of sound from the speaker ⑭ or earphone ⑰ excluding warning sounds. At the minimum position the sound cannot be heard at all.





⓮ Speaker
When recording the speaker can be used for to monitor either E-E sound* or simultaneous playback sound, and during playback for monitoring one or both audio channels. The speaker also produces warning sounds to reinforce visual warnings.
If an earphone is plugged into the EARPHONE jack ⓱, the sound from the speaker is automatically cut off.

See the "Operation Warnings" (page A-1) for further details.

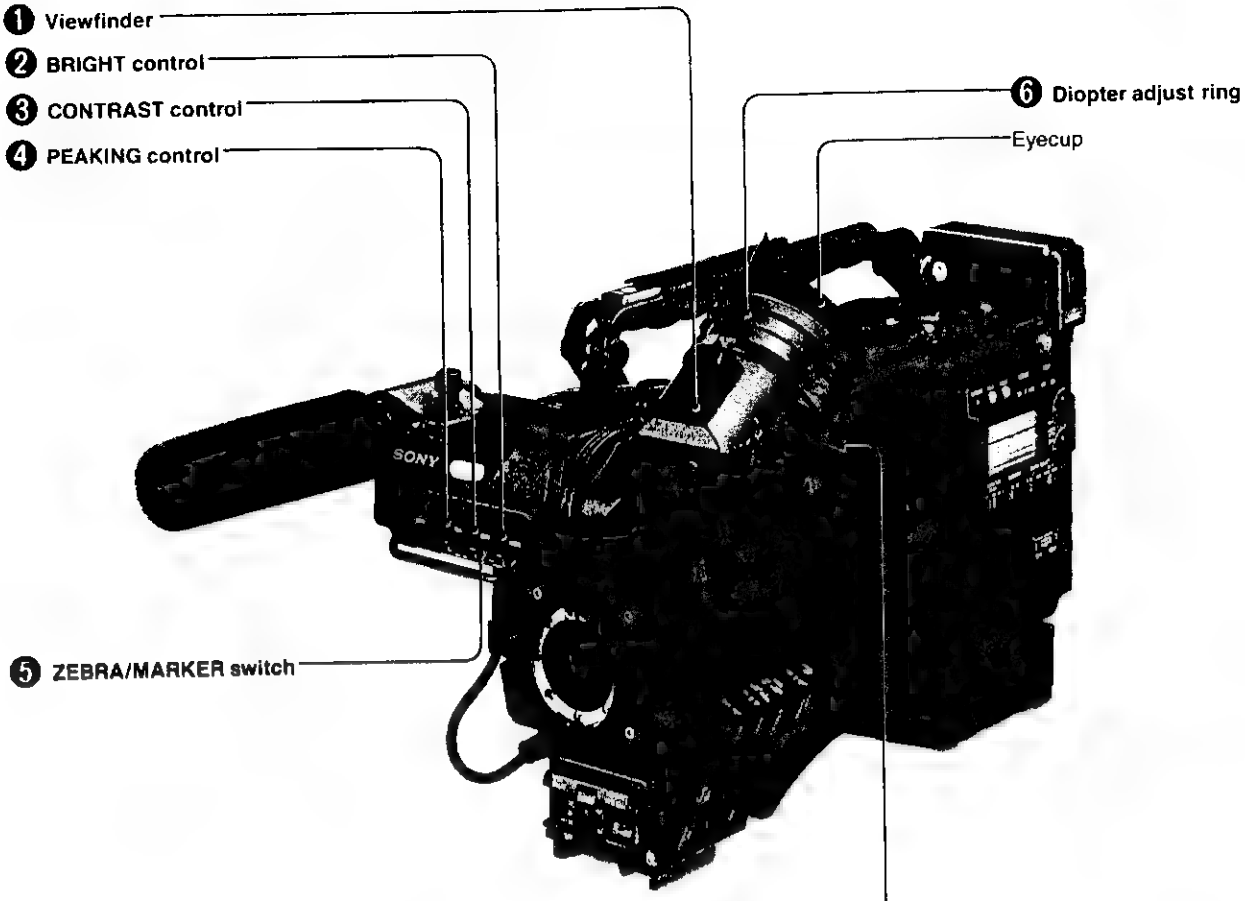
⓯ MONITOR SELECT switch
This switch selects the audio output to the speaker ⓮ or earphone.
CH-1: Audio channel 1
MIX: Mixed sound of channels 1 and 2
CH-2: Audio channel 2

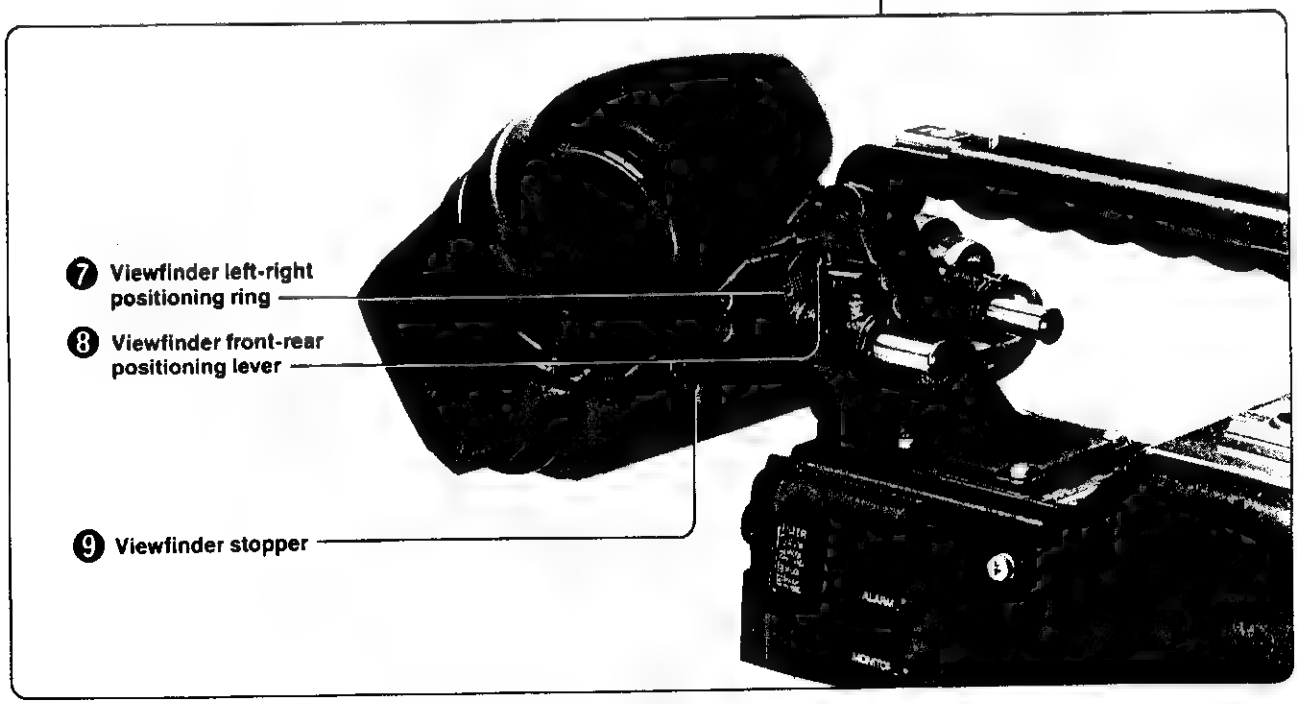
⓰ MONITOR switch
When recording, this switch controls the type of audio signal output to the speaker ⓮ or earphone.
PB: Simultaneous playback sound
EE: E-E sound*

⓱ EARPHONE jack (mini-jack)
Plugging an earphone into the jack cuts off the speaker ⓮, and the sound is heard only through the earphone.

***E-E sound (Electric to Electric sound)**
This term refers to an audio signal which has passed through the amplifier, but has not been recorded on the tape. In other words, you can directly monitor the recording input signal, as opposed to the simultaneous playback (output) signal.

2-4 Shooting and Record/Playback Functions





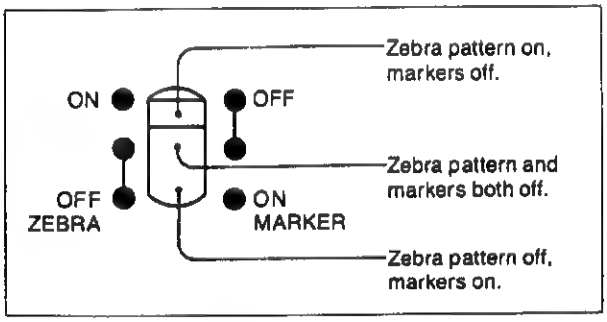
❶ Viewfinder
Enables you to view the camera image while shooting, and the playback picture from the VTR in black and white. Also provides various warnings and other information, a zebra pattern*, safety zone marker** and center marker***.

❷ BRIGHT (brightness) control
Adjusts the picture brightness on the viewfinder screen. Has no effect on the camera output signal.

❸ CONTRAST control
Adjusts the picture contrast on the viewfinder screen. Has no effect on the camera output signal.

❹ PEAKING control
Adjusts the sharpness of the picture on the viewfinder screen to make focusing easier. Has no effect on the camera output signal.

❺ ZEBRA/MARKER (zebra pattern/markers) switch
Controls the display of the zebra pattern and markers on the viewfinder screen. The settings are as follows:



Note
Unless the safety zone marker and center marker are turned on by the internal switches (SAFETY ZONE ON/OFF, CENTER MARKER ON/OFF), they will not be displayed whatever the setting of this switch. When the unit is shipped, these internal switches are all set to ON.

See Section 3-10 "Internal Switch Settings for Marker Display and 26-pin Interface Control" (page 3-30) for more details.

❻ Diopter adjust ring
Use this to adjust the veriewfinder image for your eyesight.

❼ Viewfinder left-right positioning ring
Loosen this ring to adjust the position of the viewfinder ❶ to right or left.

❽ Viewfinder front-rear positioning lever
Loosen this lever to adjust the position of the viewfinder ❶ to the front or rear.

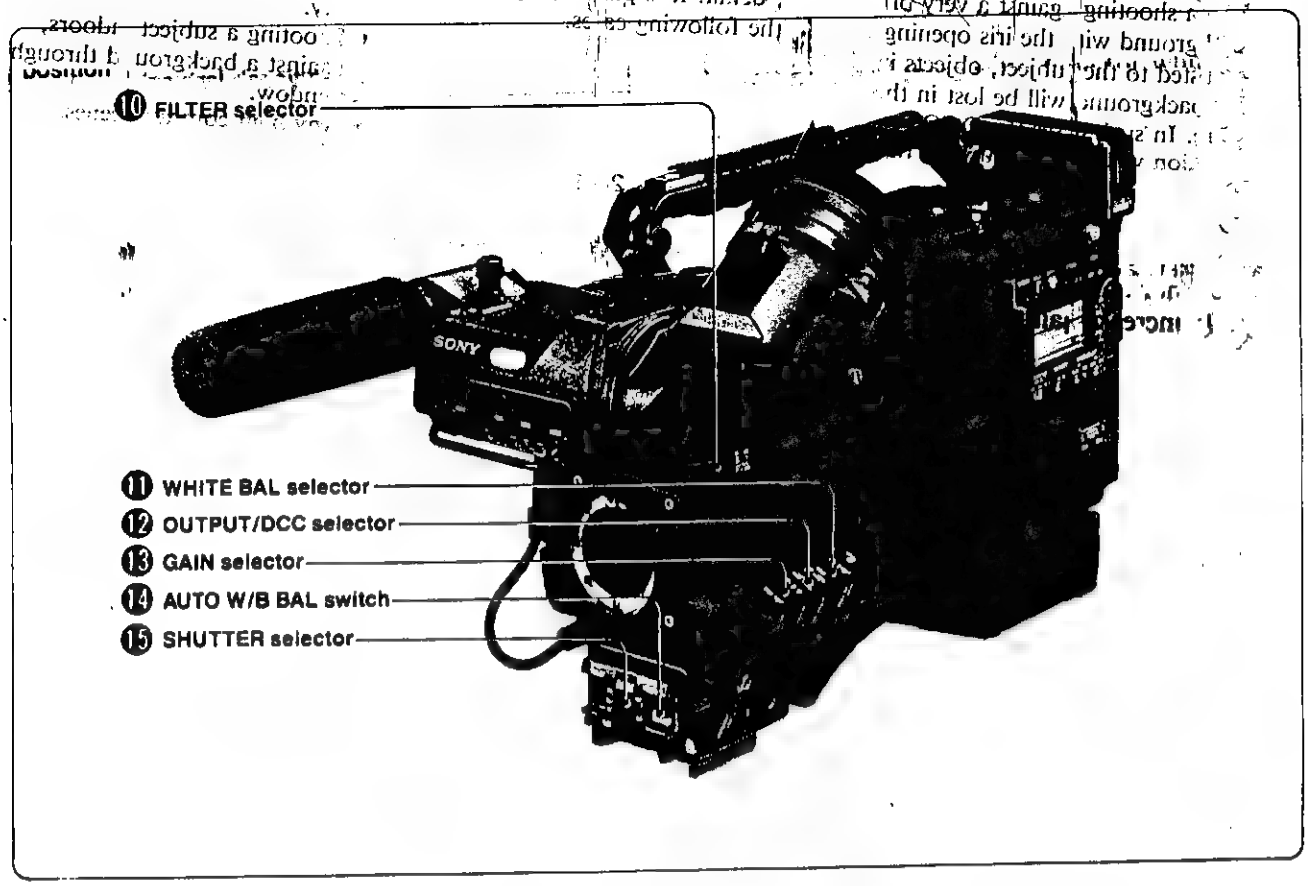
❾ Viewfinder stopper
Pull down the stopper to detach the viewfinder ❶ from the camera.

***Zebra pattern**
The zebra pattern aids manual iris adjustment, by indicating areas of the picture where the video level is approximately 70% (for the BVW-300A) or 490 mV (for the BVW-300AP).

****Safety zone marker**
The safety zone marker is a box indicating the effective picture area equivalent to 80% or 90%(the factory setting) of the whole viewfinder screen area. You can change the effective picture area from 90% to 80% by using an internal switch.

For details, see Section 3-10 "Internal Switch Settings for Marker Display and 26-pin Interface Control" (page 3-30).

*****Center marker**
The center marker indicates the center of the picture with a cross.



⑩ FILTER (optical filter) selector

Selects the appropriate internal filter for the color temperature and brightness of the shooting illumination.

Selector position	Internal filter color temperature + ND (neutral density)	Shooting conditions
1	3200 K	Sunrise, sunset; studio
2	5600 K + 1/4 ND	Outdoors, clear skies
3	5600 K	Outdoors, cloudy or rain
4	5600 K + 1/16 ND	Very bright conditions: snow, high altitudes, or seaside

⑪ WHITE BAL (balance memory) selector

Determines the source of white balance settings.

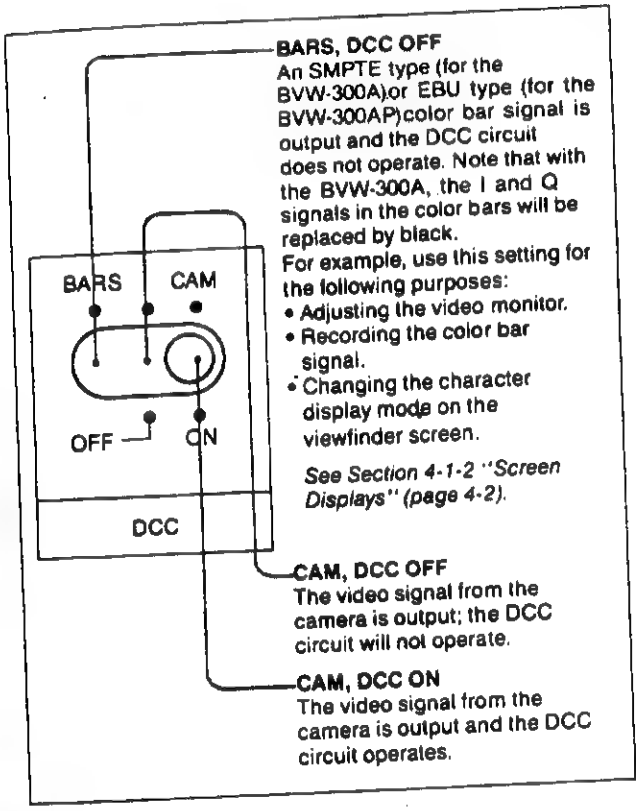
PRST (preset): provides a factory-preset white balance value for color to 3200 K when you choose the FILTER selector position 1, or for 5600 K when choosing any other FILTER selector position. Use this PRST setting when there is no time for white balance adjusting operation.

A or B: selects memory A or B. The white balance setting used will be that stored with the AUTO W/B BAL switch ⑭, for the current FILTER selector position.

⑫ OUTPUT/DCC (output signal/Dynamic Contrast Control) selector

Switches the video signal output to the VTR, viewfinder and video monitor, between the color bar signal and the camera output; also switches DCC (Dynamic Contrast Control*) on and off when camera output is selected.

OUTPUT/DCC switch settings



⑬ GAIN selector

When the light is poor and the picture dark, use this selector to increase the gain of the video amplifier, and brighten the picture.

0: normal setting
9: increase gain by 9 dB
18: increase gain by 18 dB

The gain at the 18 dB setting can be further increased to 24 dB by changing the internal switch settings.

Refer to the maintenance manual for details.

⑭ AUTO W/B BAL (automatic white/black balance adjustment) switch

WHT: pushing the switch to WHT has three functions:

- Automatic adjustment of the white balance. If the WHITE BAL switch is set to A or B, the white balance setting is stored in the corresponding memory.
- Selecting the viewfinder character display mode. This function is available only when you set the OUTPUT/DCC selector to BARS, DCC OFF to output the color bar signal.

See section 4-1-2 "Screen Displays" (page 4-2) for details.

- Stepping through the camera self diagnosis test.

Refer to the maintenance manual for details.

BLK: Automatic adjustment of black set and black balance. The setting is stored in a separate memory.

⑮ SHUTTER (electronic shutter) selector

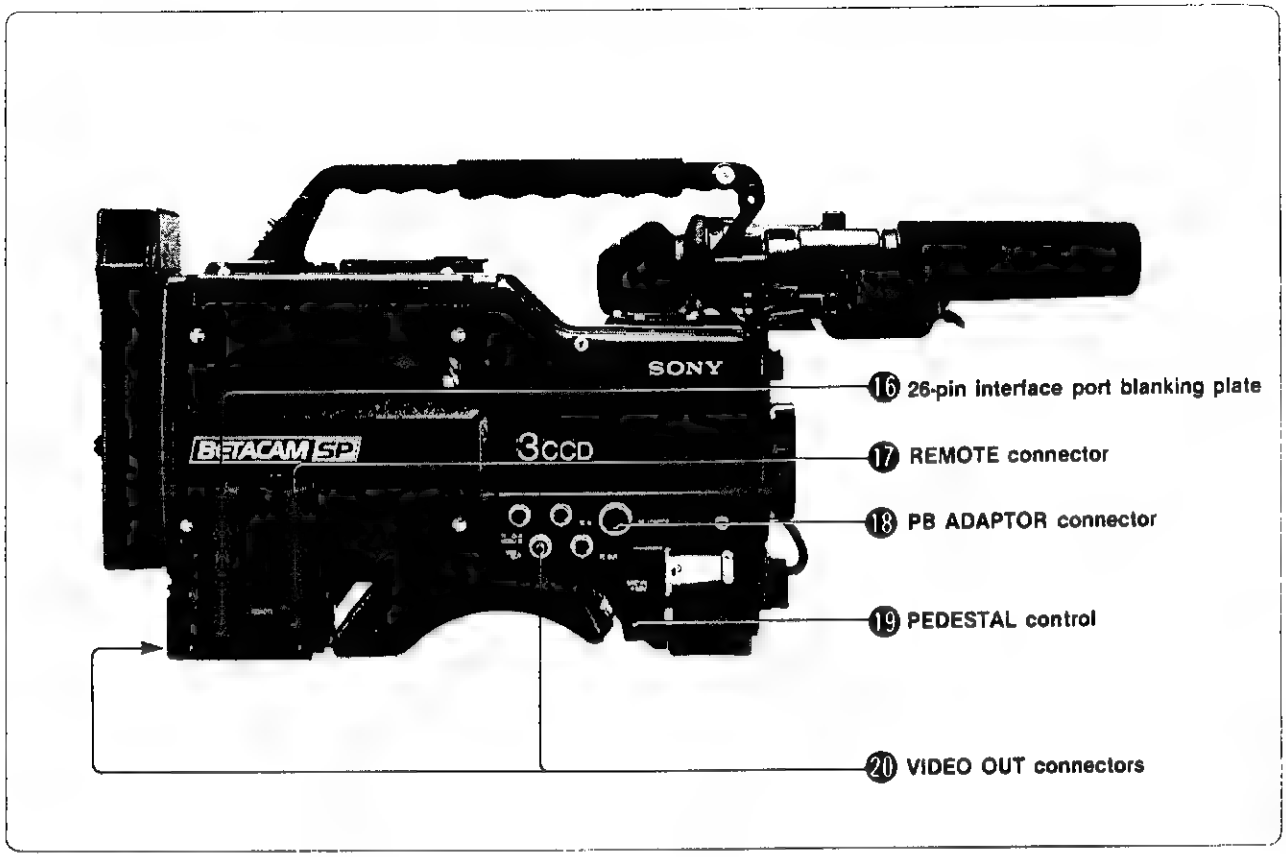
Move this selector from OFF to ON to activate the electronic shutter. Pushing the selector further down to the SEL position changes the shutter speed, which is displayed on the viewfinder screen.

See section 5-2 "Setting the Shutter Speed" (page 5-8) for details.

***DCC (Dynamic Contrast Control)**

When shooting against a very bright background with the iris opening adjusted to the subject, objects in the background will be lost in the glare. In such cases the DCC function will restore much of the lost detail. It is particularly effective in the following cases.

- Shooting people against a bright sky.
- Shooting a subject indoors, against a background through a window.
- Any high contrast scenes.



⑯ 26-pin interface port blanking plate
To equip the unit with a BKW-402 VTR connector unit (not supplied), remove this plate and install the 26-pin connector of the BKW-402 here. By connecting an external VTR such as the BVW-35/35P/25/25P portable cassette recorder to the 26-pin connector, you can simultaneously record on it and the internal VTR.

⑰ REMOTE (remote control) connector (6-pin)
Connect the RM-P3 remote control unit (not supplied) to this connector.

⑱ PB ADAPTOR (playback adaptor) connector (20-pin)
This connector is for connecting a television or color monitor by means of the VA-500/500CE playback adaptor (not supplied); you can then see the playback picture in color.
Additionally, by connecting a portable VTR such as a BVW-35/35P/25/25P with a CCRZ-5 cable (not supplied) you can record on the external VTR instead of the built-in VTR.

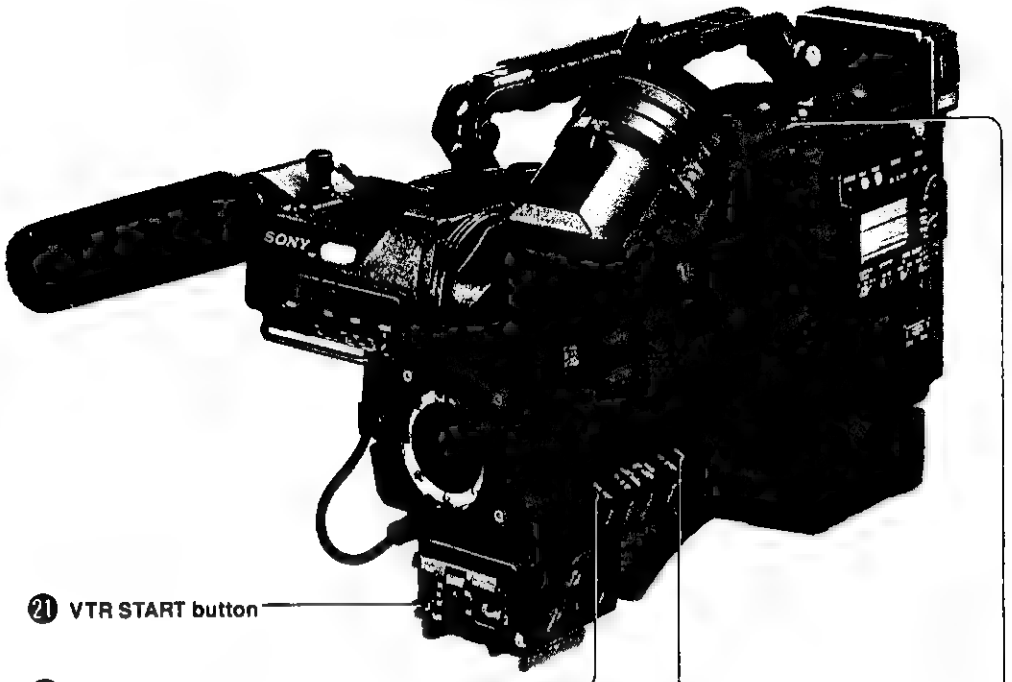
⑲ PEDESTAL control
Adjusts the master pedestal level.

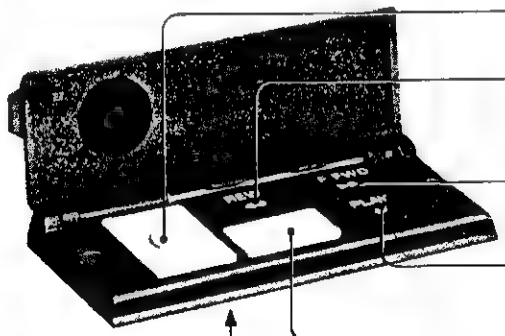
⑳ VIDEO OUT (output) connectors (BNC type)

- To check the picture the camera is shooting, connect a video monitor. In recording mode (REC, REC PAUSE, REC REVIEW or STOP modes) the picture from the camera is output, but in playback mode (PLAY, F FWD, REW modes) no picture is output.
- To external-lock the time code of another unit of BVW-300A/300AP, connect to the GENLOCK VIDEO IN connector of the unit.
- Both of the VIDEO OUT connectors, on the rear and the side, can supply a satisfactory level of signal at terminating impedance of 75 ohms.

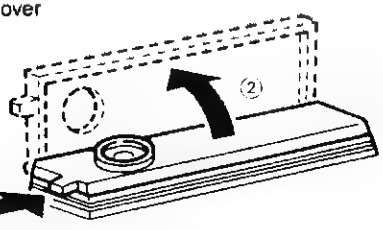
Note

The side connector can supply independently a satisfactory level of signal at terminating impedance of 75 ohms. However, the rear connector is connected internally to the PB ADAPTOR connector (20-pin) ⑱ and the 26-pin interface, so it is not possible to get a satisfactory signal at 75-ohm terminating impedance simultaneously from more than one of the rear VIDEO OUT connector, the PB ADAPTOR connector and the 26-pin interface.





Opening the cover



Press the projection.

㉑ VTR START button
Press this button to start recording, and press again to stop. The effect is exactly the same as that of the VTR button on the lens.

㉒ VTR SAVE/ST.BY switch
Controls the VTR powering mode during a recording pause (REC PAUSE).

SAVE: power saving mode. When the VTR START button is pressed, there is a delay before recording starts, but the power consumption is reduced compared with stand-by mode, prolonging battery life.

ST.BY: stand-by mode. Recording will restart immediately.

You can check the setting of this switch while looking into the viewfinder: if the switch is set to SAVE, the VTR SAVE lamp below the viewfinder screen lights.

See Section 4-1 "Warnings and Indications in the viewfinder" (page 4-1).

㉓ CTDM (Compressed Time Division Multiplex playback) button
Pressing this button during playback or recording review changes the playback picture on the viewfinder screen to a time division chroma signal, so you can check a chrominance track.

㉔ EJECT (cassette eject) button
Press to eject cassette, and also when loading a cassette.

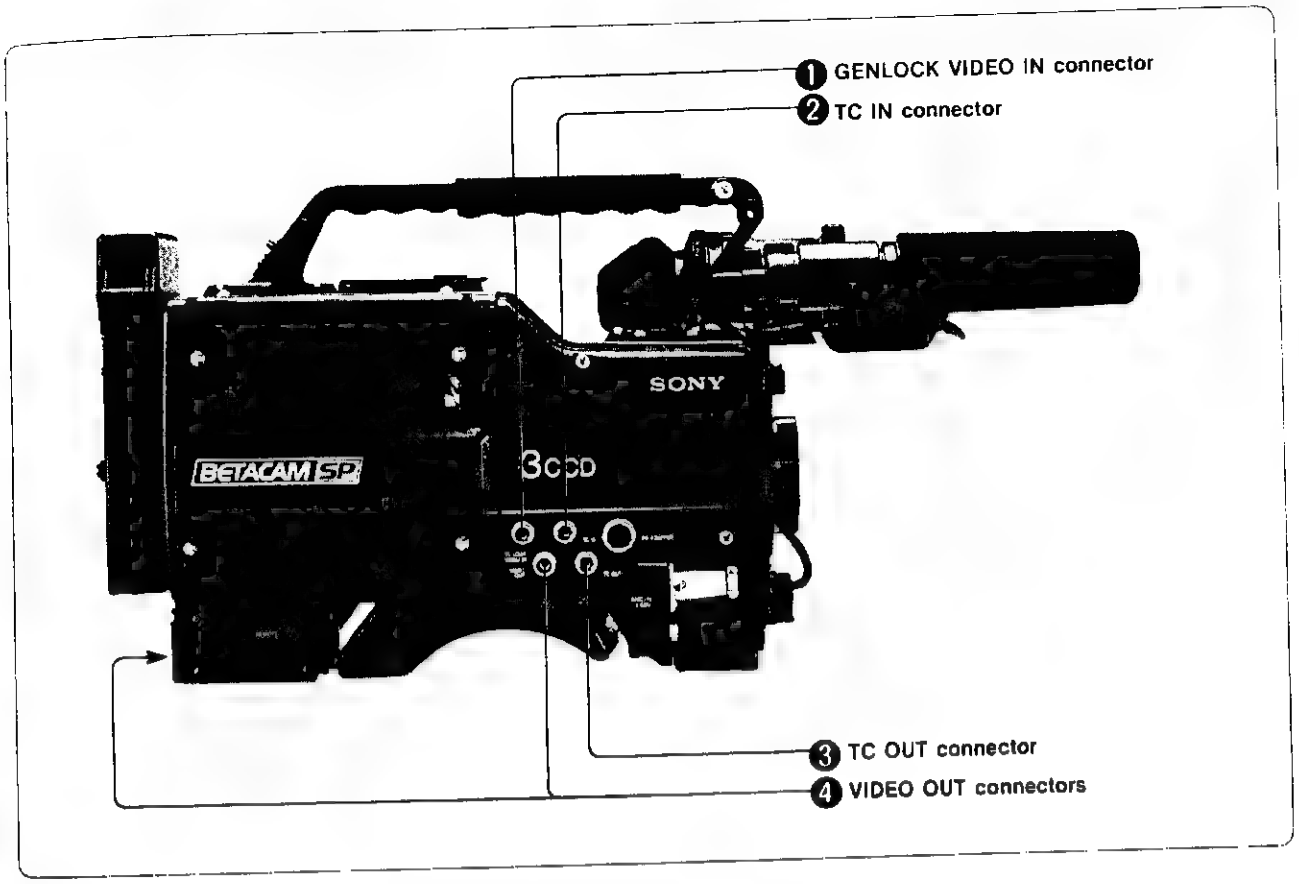
㉕ REW (rewind) button and lamp
Press to rewind the tape. The lamp is on while rewinding.

㉖ F FWD (fast forward) button and lamp
Press to fast forward the tape. The lamp is on during fast forward.

㉗ PLAY (playback) button and lamp
Press to view the recorded picture in the viewfinder or on a video monitor connected via a VA-500/500CE playback adaptor. The lamp is on during playback.

㉘ STOP button
Press to stop the tape.

2-5 Time Code System

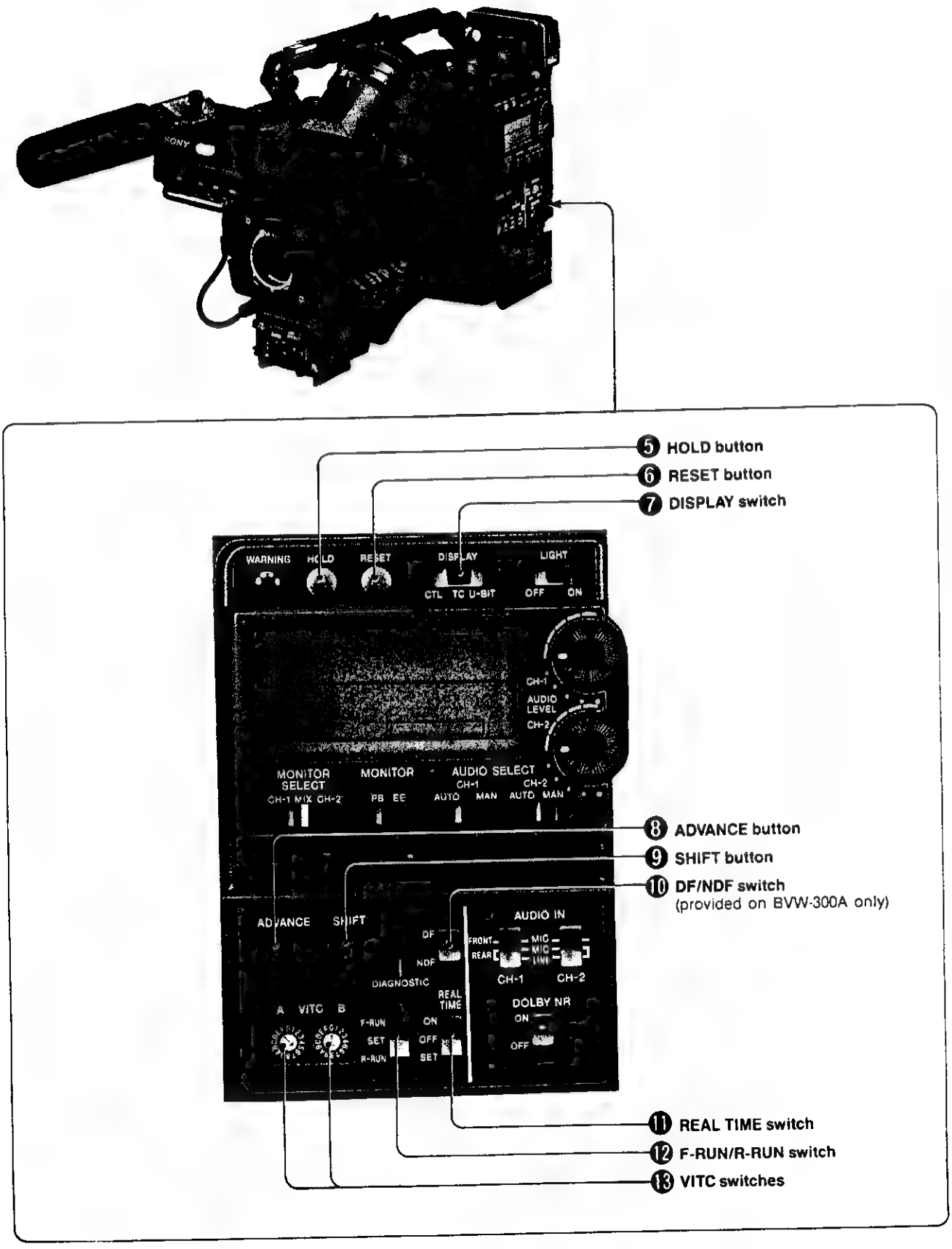


❶ GENLOCK VIDEO IN (video input for genlock) connector (BNC type)
To supply a genlock signal to the unit, or to slave-lock the time code, connect the reference signal input.

❷ TC IN (time code input) connector (BNC type)
To slave-lock the time code, connect the reference time code input.

❸ TC OUT (time code output) connector (BNC type)
To slave-lock the time code of an external VTR, connect this connector to the TC IN slave-lock connector of the external VTR.

❹ VIDEO OUT connectors (BNC type)
- When slave-locking the time code of another unit of BVW-300A/300AP, connect to the GENLOCK VIDEO IN connector of that unit.
- To check the picture the camera is shooting, connect to a video monitor.


5 HOLD button
6 RESET button
7 DISPLAY switch
WARNING
HOLD
RESET
DISPLAY
CTL TC U-BIT
LIGHT
OFF ON
CH-1
AUDIO LEVEL
CH-2
MONITOR SELECT
CH-1 MIX CH-2
MONITOR
PB EE
AUDIO SELECT
CH-1
AUTO MAN
CH-2
AUTO MAN
8 ADVANCE button
9 SHIFT button
10 DF/NDF switch
(provided on BVW-300A only)
ADVANCE
SHIFT
DF
NDF
DIAGNOSTIC
AUDIO IN
FRONT
REAR
MIC
MIC
LINE
CH-1
CH-2
A VITC B
F-RUN
SET
R-RUN
REAL TIME
ON
OFF
SET
DOLBY NR
ON
OFF
11 REAL TIME switch
12 F-RUN/R-RUN switch
13 VITC switches

❺ HOLD (display hold) button
At the instant this button is pressed, it freezes the time data displayed in the counter display section. (The time code generator continues counting normally.) Press again to release the hold. Use this feature to determine the exact time of a particular shot for example.

See Section 4-2 "Warnings and Indications in the Display Panel" (page 4-5) for more details of the counter display.

❻ RESET (counter reset) button
Resets the time data displayed on the counter display section to "00:00:00:00", and the user bit data to "00000000".

❼ DISPLAY switch
Depending on the settings of the REAL TIME switch ⓫ and the F-RUN/R-RUN switch ⓬, selects data to display in the counter display section, as follows:

U-BIT: displays user bits.
TC: displays time code.
CTL: displays CTL.

For more details see Section 5-4-1 "Setting the Time Code" (page 5-14).

❽ ADVANCE button
When setting the time code or user bits, each press of this button is increments the flashing digit selected by the SHIFT button ❾.

❾ SHIFT button
When setting the time code or user bits, this button selects the digit to change. The selected digit flashes.

⓾ DF/NDF (drop frame/non drop frame) switch
Selects whether the time code advances in drop-frame mode (DF) or non-drop-frame mode (NDF).

⓫ REAL TIME (time of the day) switch
Use this switch to select whether real time is put into VITC user bits (ON or OFF), or to set real time (SET).

⓬ F-RUN/R-RUN (free run/recording run) switch
Selects the operating mode of the internal time code generator.

F-RUN: The time code advances irrespective of whether the VTR is operating or not. Use for real-time time code or for slave-locking the time code.
SET: Set to this position to set the time code or user bits.
R-RUN: The time code advances only while recording, and therefore the time code is continuous on the tape.

For more details see Section 5-4-1 "Setting the Time Code" (page 5-14).

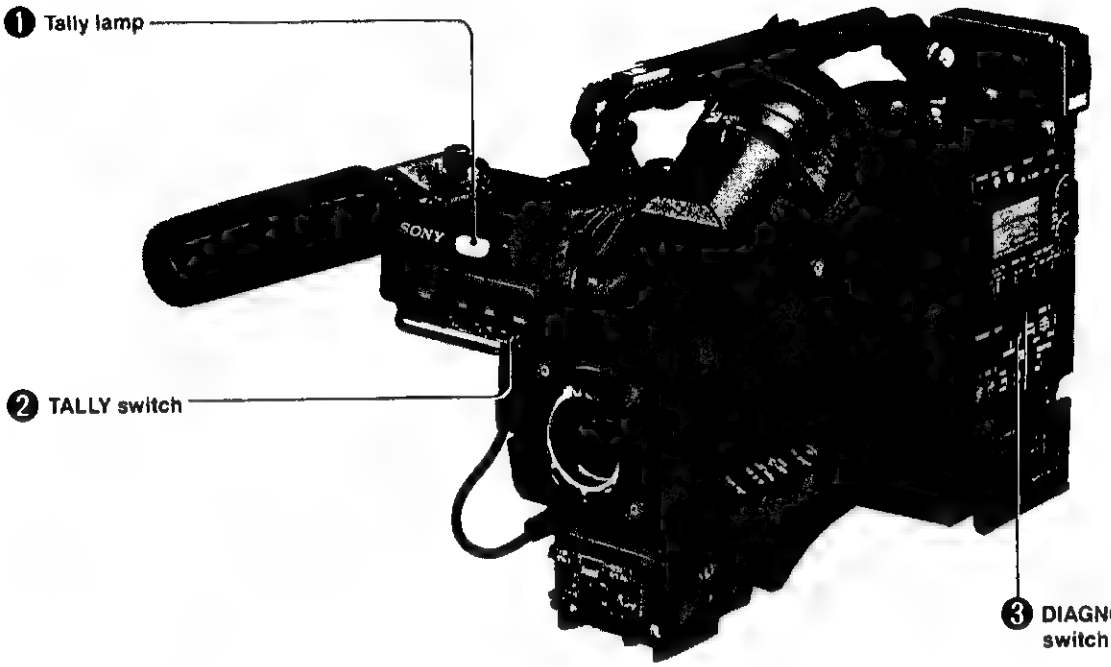
⓭ VITC (VITC line setting) switches
Selects the lines on which VITC* is inserted.

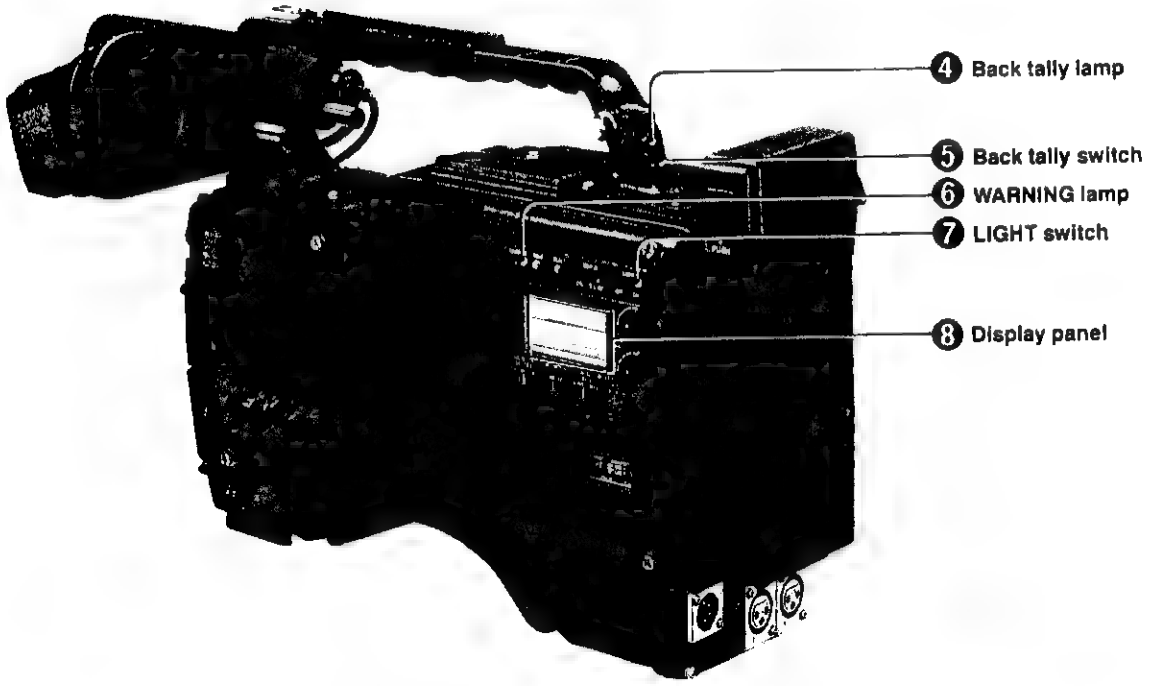
For more details see Section 5-4-1 "Setting the Time Code" (page 5-14).

***VITC(Vertical Internal Time Code)**
A time code which is recorded on tape in two horizontal lines during each vertical blanking internal of the video signal. It can be read out and displayed even when you play back the tape at very low speed or in the pause mode.

2-6 Warnings and Indications

These functions give you visual information and warnings without looking in the viewfinder.





❶ Tally lamp
The tally lamp provides the same information as the REC indicator in the viewfinder; that is, it comes on while recording, and flashes to indicate a problem.

❷ TALLY switch
This controls the tally lamp ❶, setting its brightness (LOW or HIGH) or turning it off.

❸ DIAGNOSTIC switch
When the VTR section is in the stop mode, pressing this button makes the unit enter the self-diagnostic mode to test the display panel, camera and VTR sections and give the test results. To make the unit exit from the self-diagnostic mode, press the switch again.

Refer to the maintenance manual for more details.

Caution
Do not press the DIAGNOSTIC switch when you have connected an RM-P3 remote control unit. If you do press, you will just throw both self-diagnostic and remote control functions into disorder. The only remedy for this disorder is to once disconnect the RM-P3 and turn the POWER switch of the BVW-300A/300AP off.

❹ Back tally lamp
Functions exactly the same way as the front tally lamp ❶ when the back tally switch ❺ is set to ON.

❺ Back Tally switch
Turns the back tally lamp ❹ on or off.

❻ WARNING lamp
This lamp lights up or flashes when there is a fault in the VTR.

See the "Operation Warnings" (A-1) for more details.

❼ LIGHT switch
Turns the illumination of the display panel ❽ on and off.

❽ Display panel
Shows VTR error messages, battery state, audio recording level, time data and so forth.

See Chapter 4 "Warnings and Indications in the Viewfinder and Display Panel" for more details.

3-1-3 Avoiding Breaks in Operation Due to Exhausted Batteries

If you use an internal battery pack and an external battery connected to the DC IN connector at the same time, then when the external battery is exhausted and needs replacing, you can maintain continuous operation using the internal battery pack. Again, if the internal battery is close to needing replacement, you can connect an external battery to allow continuous operation while you replace the internal battery pack.

When the external battery is getting exhausted with the unit also fitted with an internal battery pack

First remove the DC output cord of the external battery from the DC IN connector. The power supply will switch to the internal battery pack. Then since the voltage of the internal battery pack will already has dropped somewhat, connect a fully charged external battery as soon as possible. The maximum time is about 10 minutes for this unit.

When you change both batteries, be sure to first replace the external one which is getting exhausted. If you remove the internal battery first, the unit may stop immediately.

When the external battery is getting exhausted with the unit not fitted with an internal battery pack

First load a fully charged internal battery pack, then remove the DC output cord of the external battery from the DC IN connector. The power supply will switch to the internal battery pack. To use an external battery again,connect a fully charger one to the DC IN connector before unloading the internal battery pack.

Making operation continuous when operating with an internal battery alone

First connect a fully charged external battery to the DC IN connector, then change the internal battery.

Notes

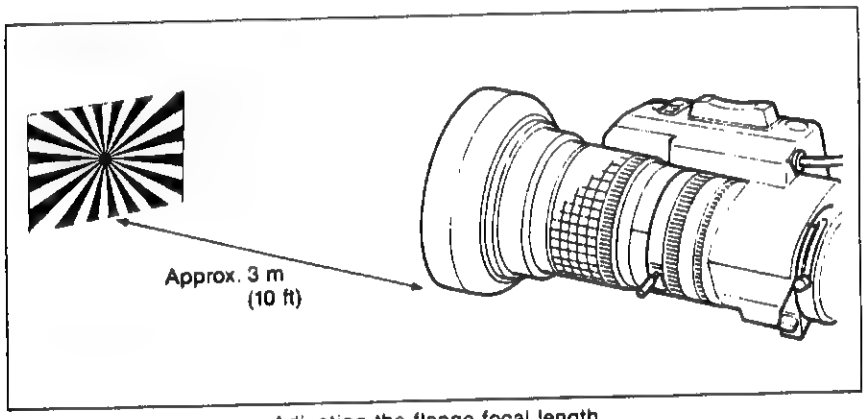
- When you load an internal battery pack and also connect an external battery to the DC IN connector, it is always the external battery that serves as power supply.
- There may be some noise on the video signal at the instant the power supply is switched.

3-3 Adjusting the Flange Focal Length

If the lens does not stay properly in focus as you zoom from telephoto to wide angle, adjust the flange focal length (the distance from the plane of the lens mounting flange to the imaging plane). Be sure to make this adjustment after mounting the lens for the first time or after changing the lens.

Adjusting the flange focal length

The positions of the controls for making this adjustment vary somewhat from lens to lens. Check the identification of the various controls in the manual supplied with the lens.



Adjusting the flange focal length

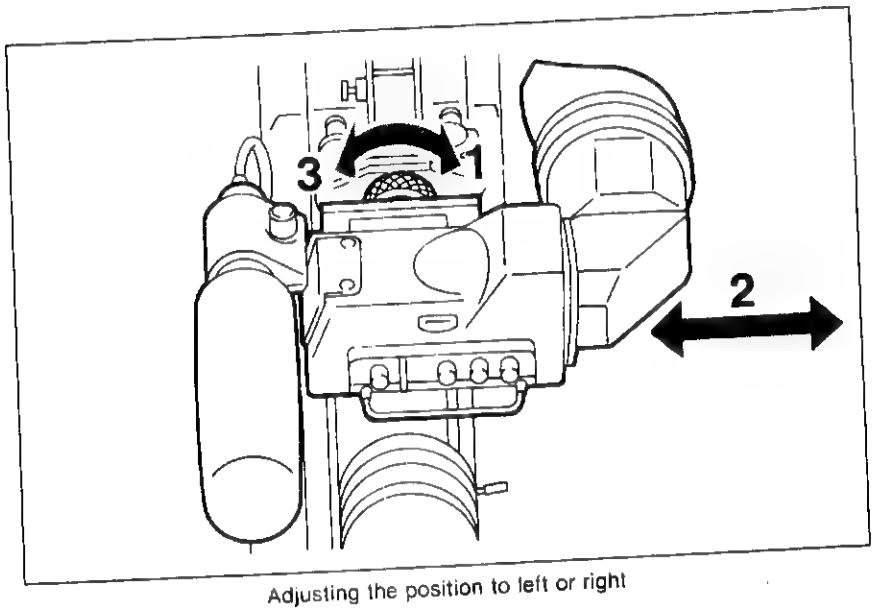
1. Set the iris control to manual.
2. Open the iris. Place the flange focal length adjustment chart about 3 m (10 ft) away from the camera, lit well enough to provide a satisfactory video output level.
3. Loosen the fixing screws on the Ff ring (flange focal length adjusting ring).
4. Use the manual or power zoom to set the lens to telephoto.
5. Point the camera at the chart, and focus on it.
6. Set the zoom to wide angle.
7. Turn the Ff ring until the chart is in focus, being careful not to disturb the focusing ring.
8. Repeat steps **4** to **7** until the chart stays in focus all the way from wide angle to telephoto.
9. Tighten the Ff ring fixing screws.

3-4 Adjusting the Viewfinder

You can adjust the viewfinder position in left-right and front-back directions, for maximum viewing convenience.

3-4-1 Adjusting the Position

Adjusting to left or right



Adjusting the position to left or right

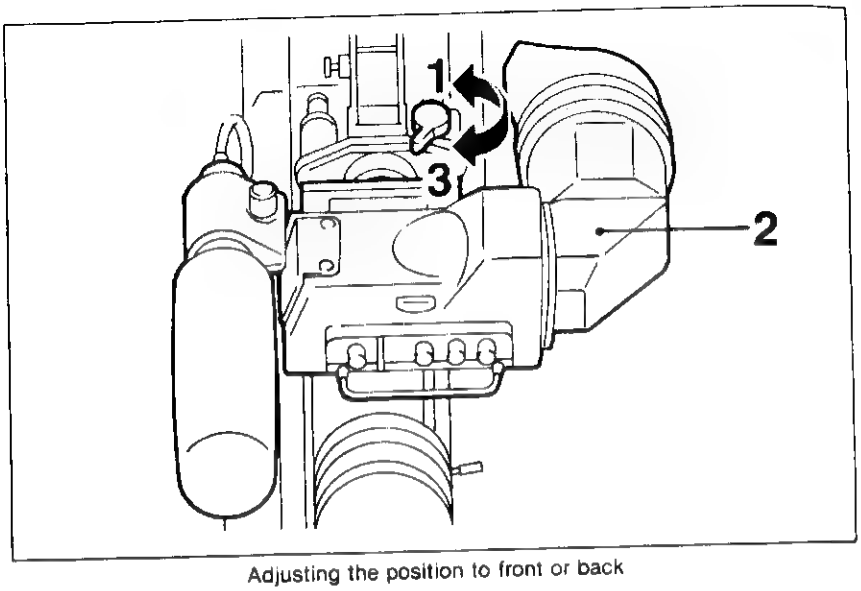
1 Loosen the viewfinder left-right positioning ring.

2 Slide the viewfinder sideways to the most convenient position.

3 Tighten the viewfinder fixing ring.

Storing the unit in the carrying case
Always store the unit with the viewfinder moved fully in the direction opposite to the barrel, and the viewfinder fixing ring fastened.

Adjusting the position to front or back



Adjusting the position to front or back

1 Loosen the viewfinder front-rear positioning lever.

2 Slide the viewfinder longitudinally to the most convenient position for viewing.

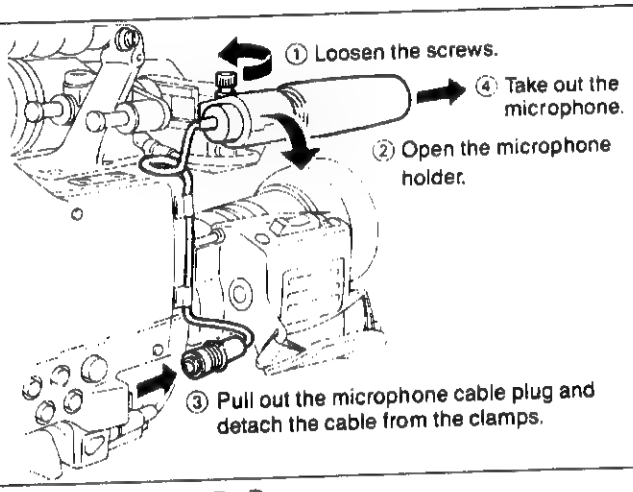
3 Tighten the viewfinder front-rear positioning lever.

Using the viewfinder with your left eye

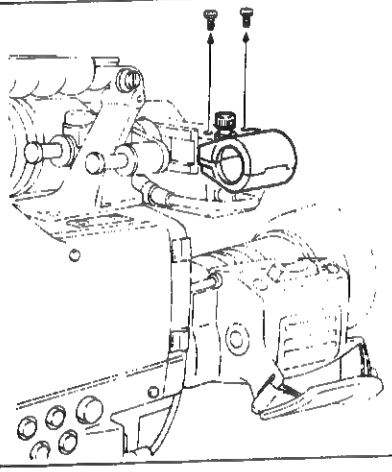
By attaching ▮ left-eyed shooting viewfinder slide guide (Part No. A 7612-381-A, not supplied), you can use the unit easily with your left eye on the viewfinder.

The fitting procedure is as follows.

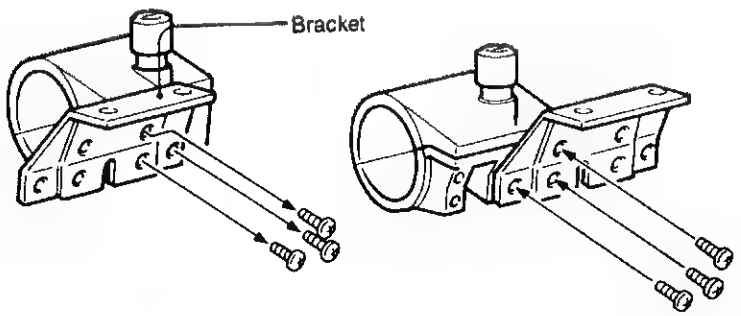
1 Remove the microphone.

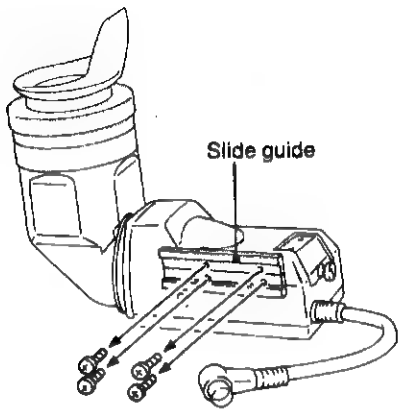
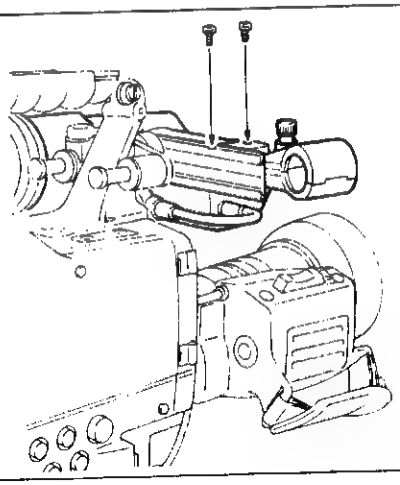


2 Detach the microphone holder after closing.



3 Remove the microphone bracket, reposition as shown in the figure, and re-attach.

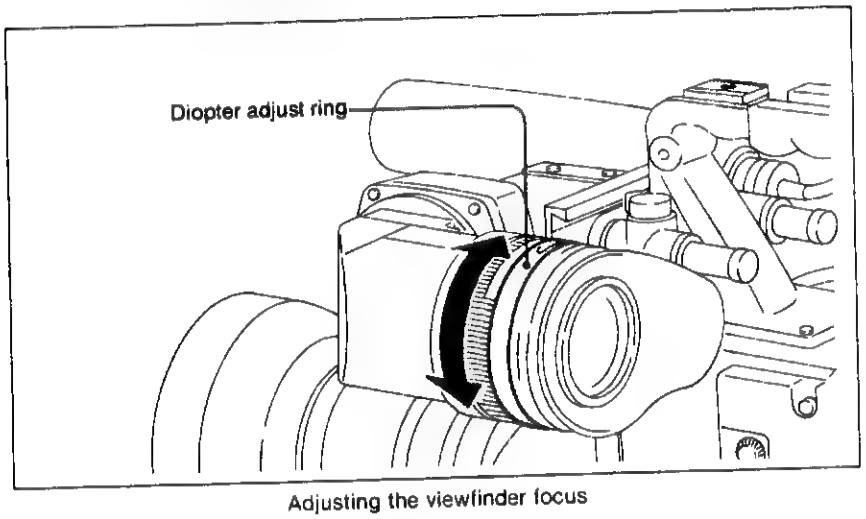


4 Remove the viewfinder from the unit.	*See the section "3-4-3 Detaching the Viewfinder" (page 3-14) for the procedure.*
5 Detach the slide guide from the viewfinder.	
6 Attach the left-eyed shooting slide guide.	
7 Fit the viewfinder back on the unit, and attach the microphone holder to the viewfinder using the screws removed in step **2**.	

3-4-2 Adjusting the Focus and Screen of the Viewfinder

Adjusting the viewfinder focus

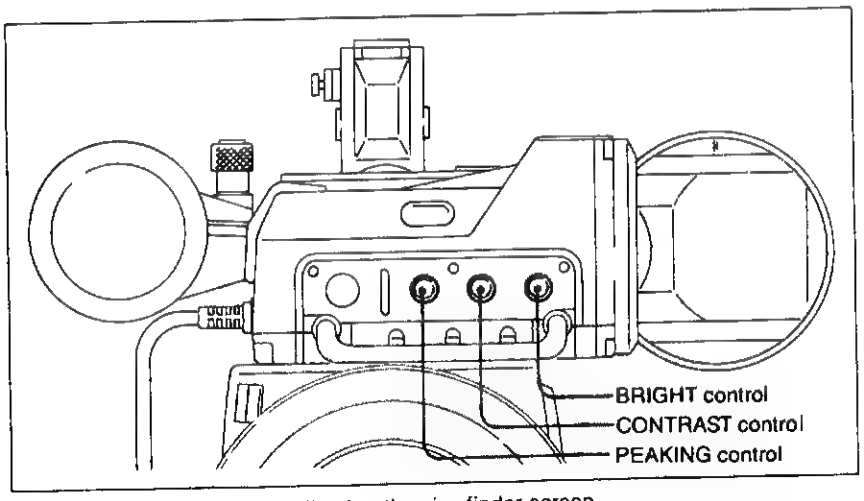
Turn the diopter adjustment ring until the viewfinder image is sharpest for your eyesight.



Adjusting the viewfinder focus

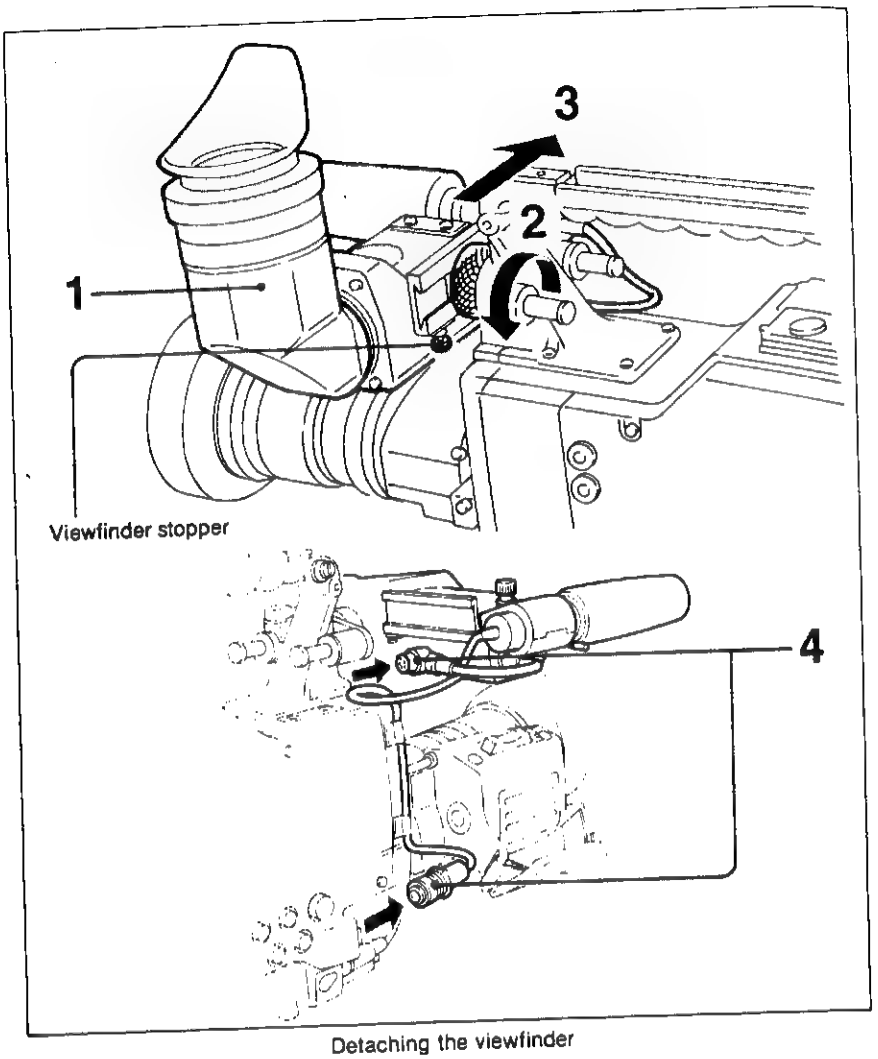
Adjusting the viewfinder screen

You can adjust the brightness, contrast and peaking of the viewfinder screen with the controls illustrated below.



Adjusting the viewfinder screen

3-4-3 Detaching the Viewfinder



Detaching the viewfinder

1 Point the barrel up or down.

2 Loosen the viewfinder left-right positioning ring.

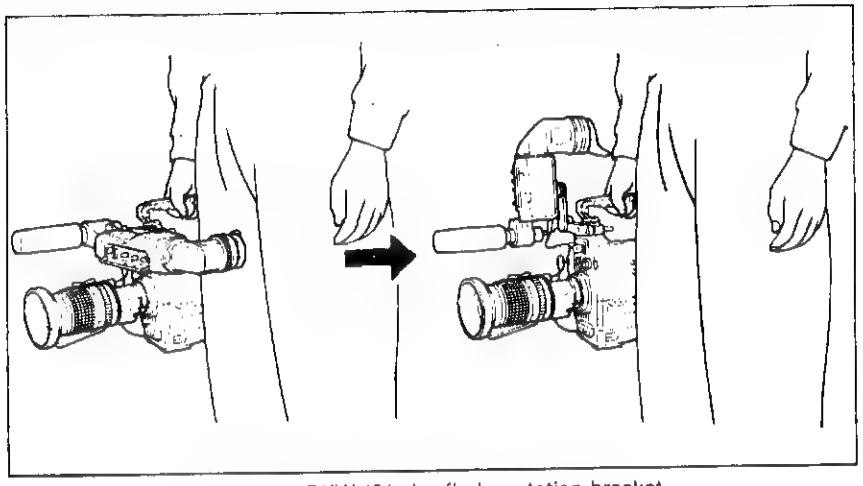
3 Holding the viewfinder stopper down, slide the viewfinder in the direction of the arrow, and detach.

4 Remove the viewfinder cable and microphone cable from the clamps, and disconnect.

About the viewfinder rotation bracket

By fitting a BKW-401 viewfinder rotation bracket (not supplied), you can rotate the viewfinder out of the way to avoid that your right leg hits the viewfinder while carrying the unit.

For details refer to the manual for the BKW-401.

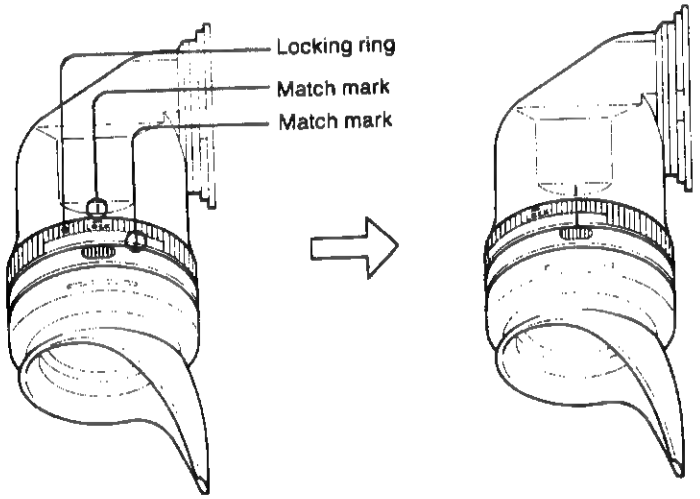


Using the BKW-401 viewfinder rotation bracket

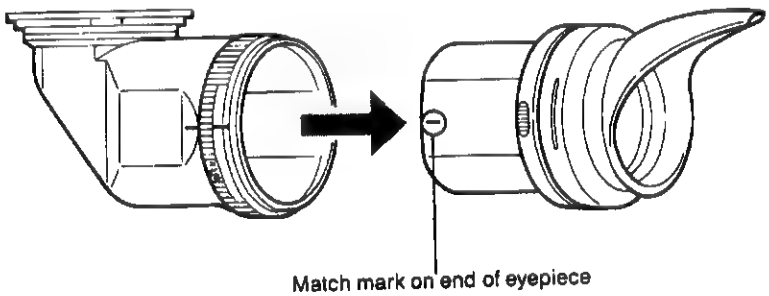
3-4-4 Detaching the Eyepiece

By removing the eyepiece you can get a clear view of the screen from further away. It is also easy to remove dust from the CRT screen and mirror when the eyepiece is detached.

1 Turn the eyepiece locking ring fully counterclockwise, to line up the red match marks on the locking ring and the viewfinder barrel.



2 Detach the eyepiece.



Refitting the eyepiece

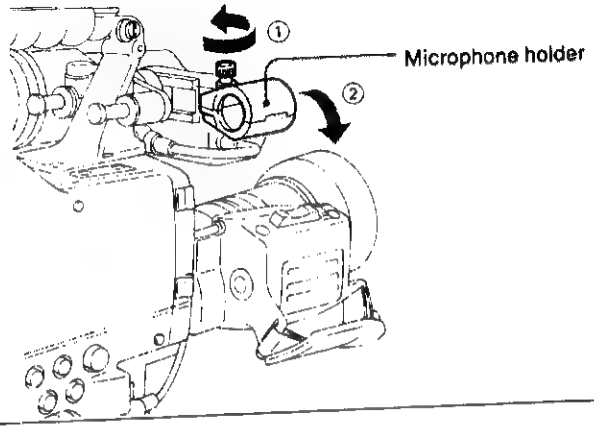
1 Align the match mark on the eyepiece locking ring with that on the viewfinder barrel.

2 Align the match mark on the eyepiece end (see the illustration to step **2** for eyepiece detachment) with those on the eyepiece locking ring and viewfinder barrel, then insert the eyepiece into the viewfinder barrel.

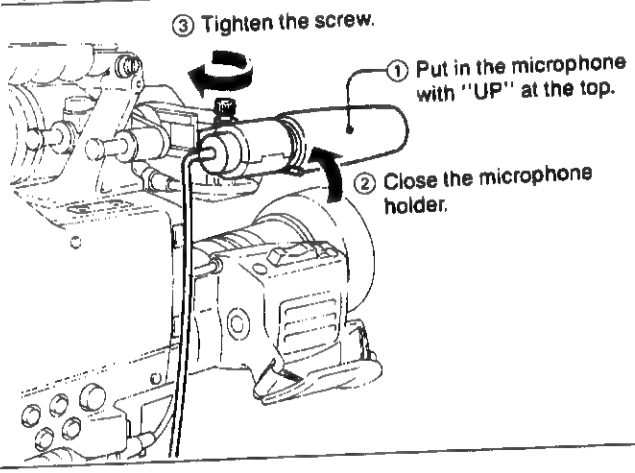
3 Turn the eyepiece locking ring clockwise until its "LOCK" indication arrow head points at the match mark on the viewfinder barrel.

Using the microphone attached to the unit

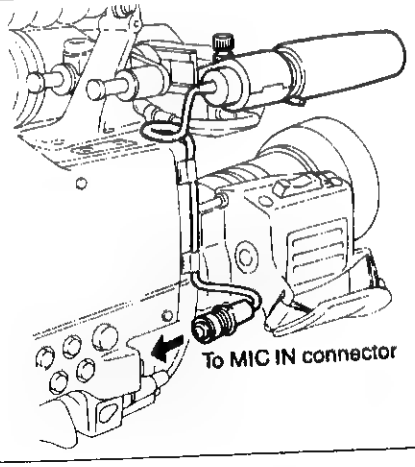
1 Loosen the screw, and open the microphone holder.



2 Put the microphone in the microphone holder.



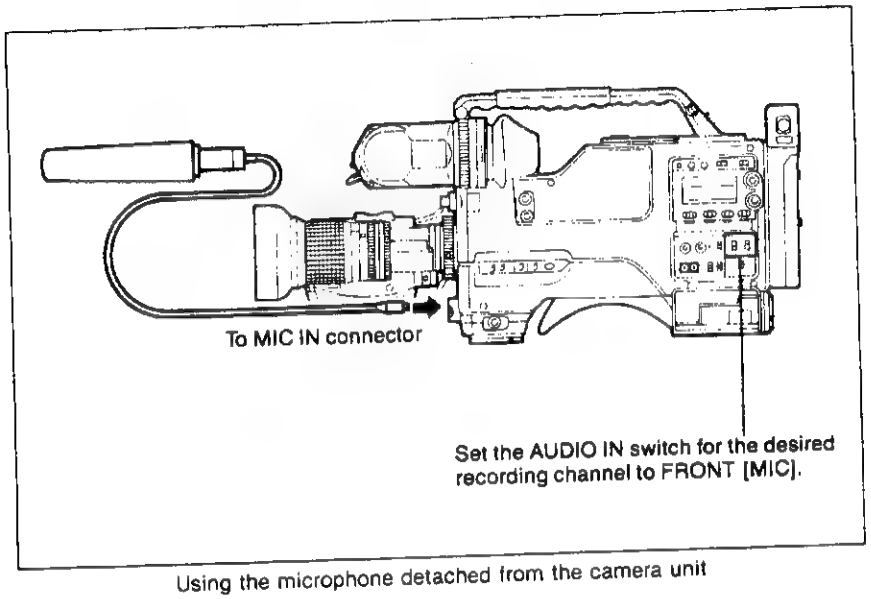
3 Plug the microphone cable into the MIC IN connector, and set the AUDIO IN switch for the desired recording channel to FRONT [MIC].



3-5 Audio Input System

3-5-1 Using the Supplied Microphone

Using the microphone detached from the camera unit



Using the microphone detached from the camera unit

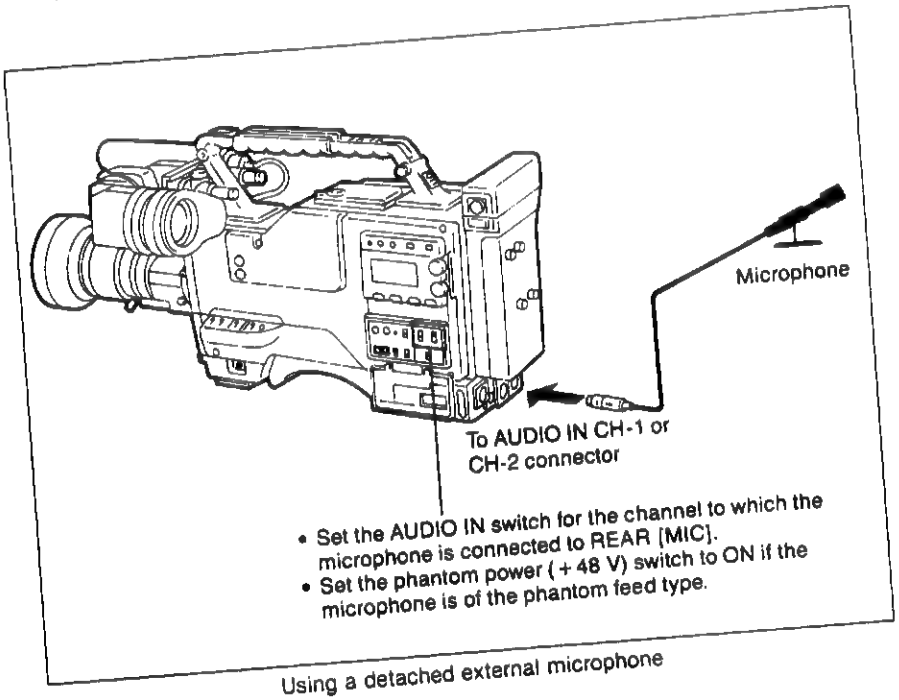
Note

When using the supplied microphone with an extension cable, always use a phantom feed type cable.

3-5-2 Using an External Microphone

Using the AUDIO IN CH-1 and CH-2 connectors, you can connect up to two external microphones. When you use a phantom feed type microphone, set the phantom power (+48 V) switch for the appropriate AUDIO IN connector to ON.

Using a detached external microphone



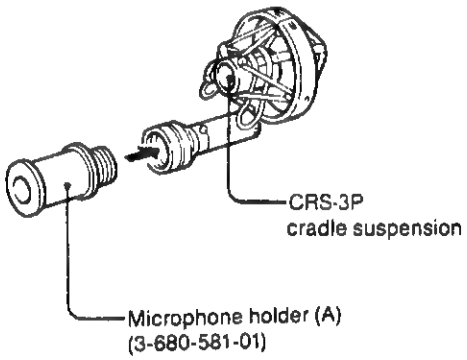
Using a detached external microphone

Using an External Microphone Attached to the Unit

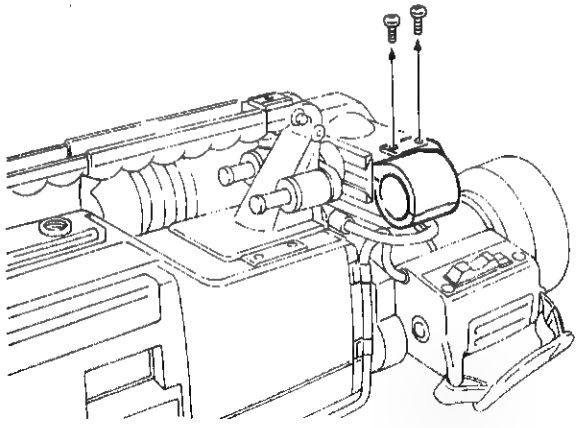
You can attach an external microphone to the unit by using a CAC-12 microphone holder (not supplied). Additionally, using a CRS-3P cradle suspension (not supplied), you can reduce the recording level of mechanical vibration noise from the VTR, and can also attach a long microphone. Note, however, that use of the CRS-3P requires a microphone holder (A), while is not supplied with the CRS-3P.
The procedure for attaching an external microphone using a CAC-12 and CRS-3P is shown below.

Refer to the manual for the microphone holder or cradle suspension for more details.

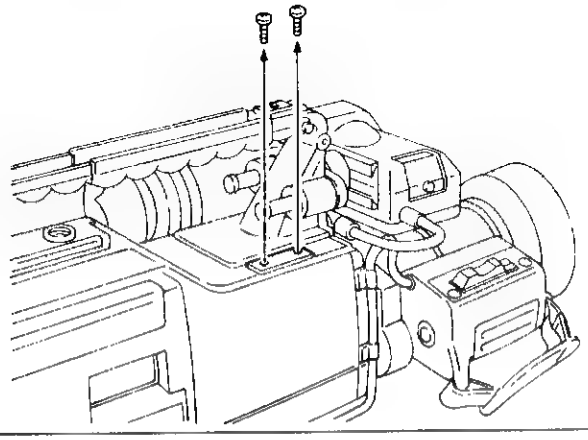
1 Assemble the CRS-3P cradle suspension and microphone holder (A) (3-680-581-01).



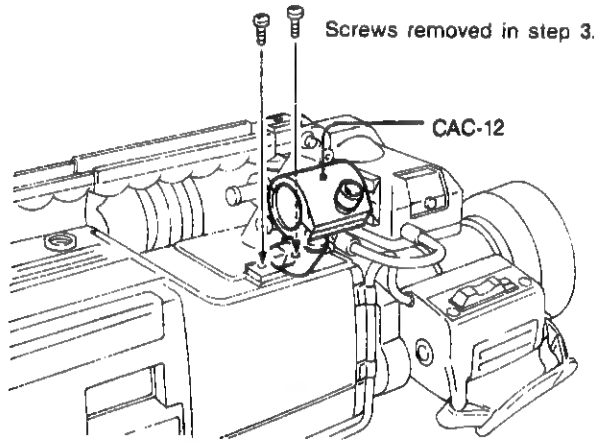
2 Detach the microphone holder from the viewfinder.



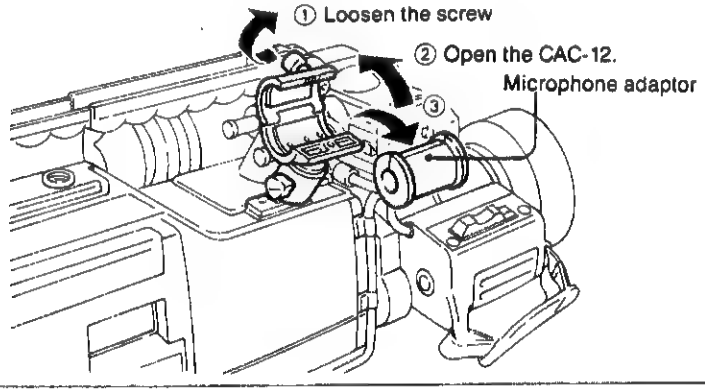
3 Remove the external microphone holder fixing screws.



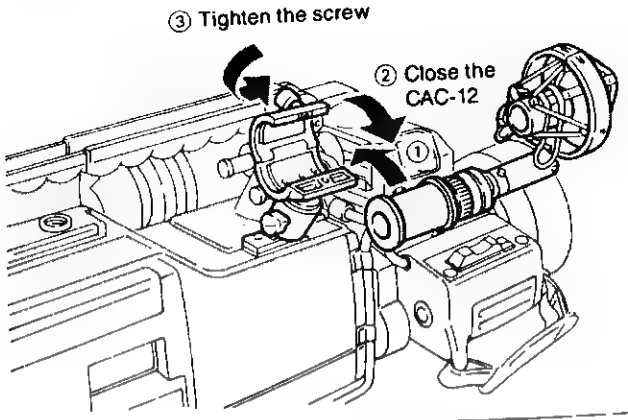
4 Attach the CAC-12 microphone holder.



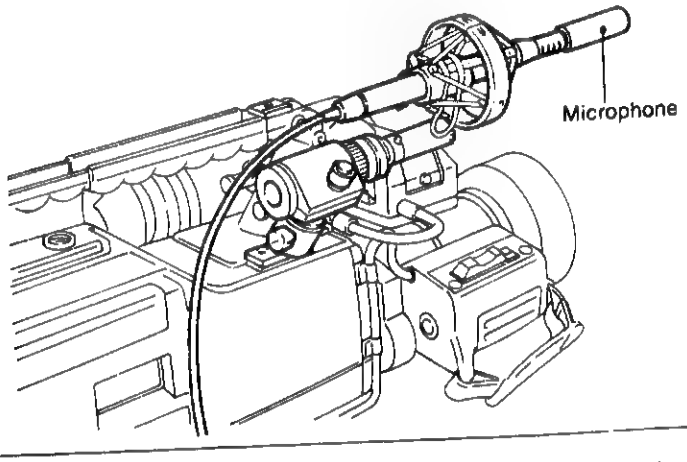
5 Open the CAC-12 and remove the microphone adaptor.



6 Mount the assembly from step **1** in the CAC-12.



7 Fit the microphone in the suspension.



8 Connect the microphone cable to the AUDI-cf- IN connector for channel 1 or 2 (and set the phantom power (+48 V) switch to ON if the microphone is the phantom feed type), and set the corresponding AUDIO IN switch to REAR [MIC].

Notes

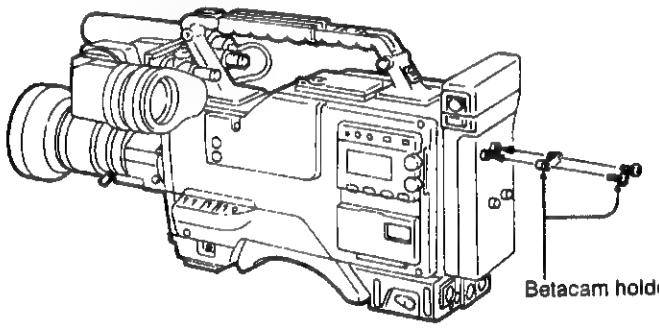
- You can only connect ■ phantom power supply type microphone to the MIC IN connector.
- Be sure to set the appropriate phantom power (+48V) switch to ON if ■ microphone you connect to the AUDIO IN CH-1/CH-2 connector is the phantom power supply type, or to OFF if not.

3-5-3 Attaching a UHF Portable Tuner (for UHF Wireless Microphone)

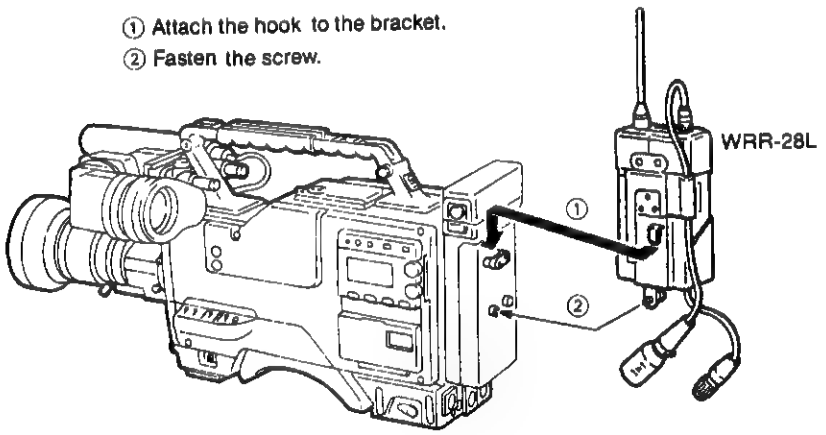
To use a Sony wireless microphone system, you will need to fit a WRR-28L or WRR-27 UHF portable tuner.
To attach the WRR-28L, insert it in its case, and using the Betacam holder kit supplied with the WRR-28L, attach to the camera unit as shown below.

Refer to the manual for the UHF portable tuner for more details.

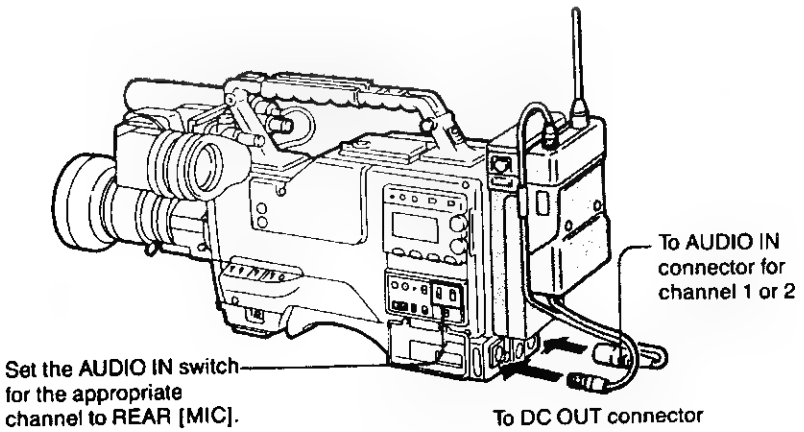
1 Attach the Betacam holder kit to the battery case.



2 Mount the tuner on the battery case.

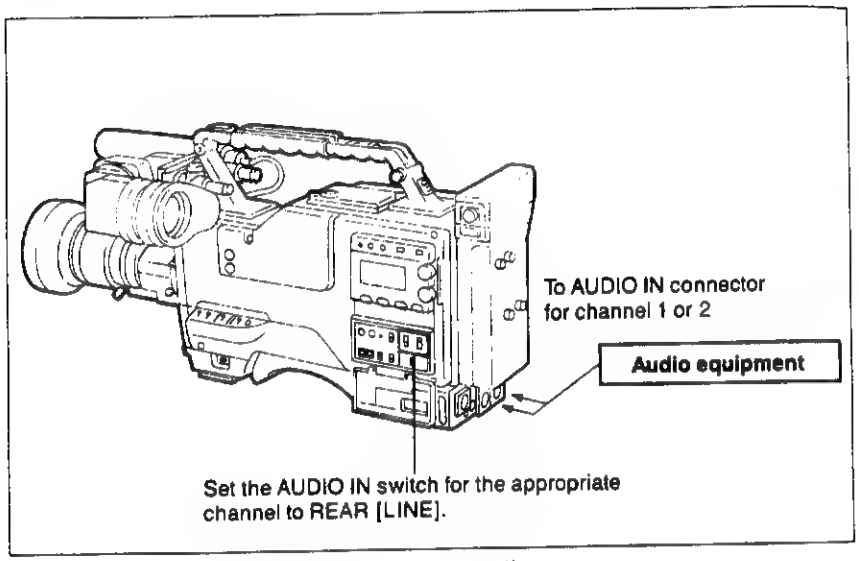


3 Connect the tuner power cable to the DC OUT connector on the unit, and the audio output cable to the AUDIO IN connector for channel 1 or 2.



3-5-4 Connecting Line Input Audio Equipment

Connect the audio output connector of the audio equipment to supply the line input signal to the AUDIO IN connector for channel 1 or 2.

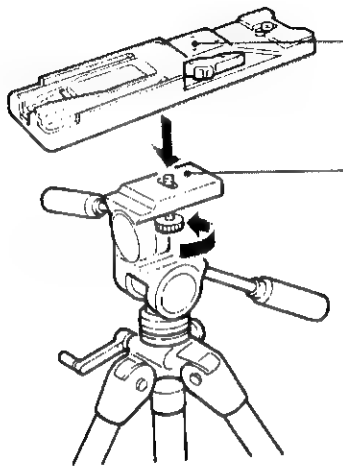


Line input connection

3-6 Tripod Mounting

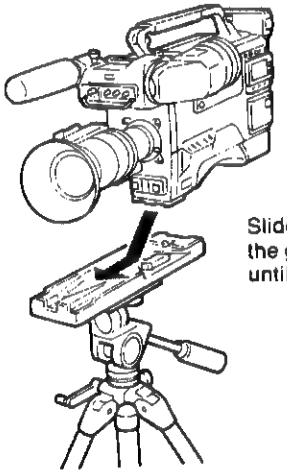
Using the tripod adaptor supplied, tripod mounting and dismounting is very easy.

1 Attach the tripod adaptor to the tripod.



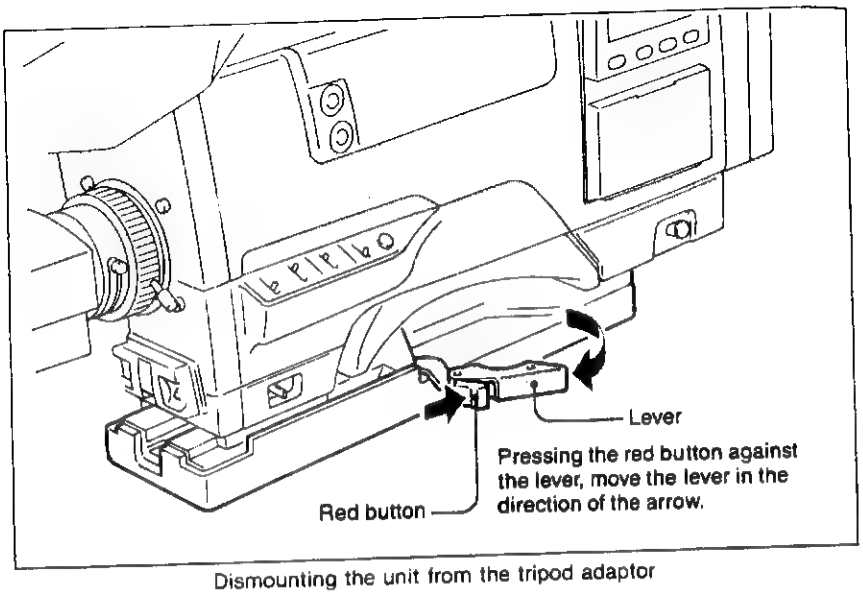
Select the screw hole in the tripod adaptor fitting the fixing screw on your tripod camera mount and giving the best balance for this unit.

2 Mount the camera unit on the tripod adaptor.



Slide the unit forward along the groove in the adaptor until it clicks.

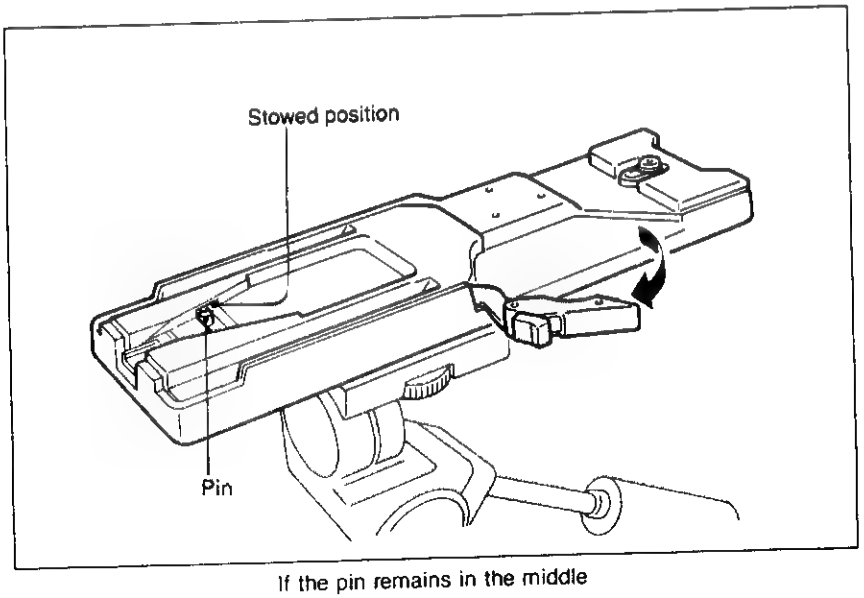
Dismounting the unit from the tripod adaptor



Dismounting the unit from the tripod adaptor

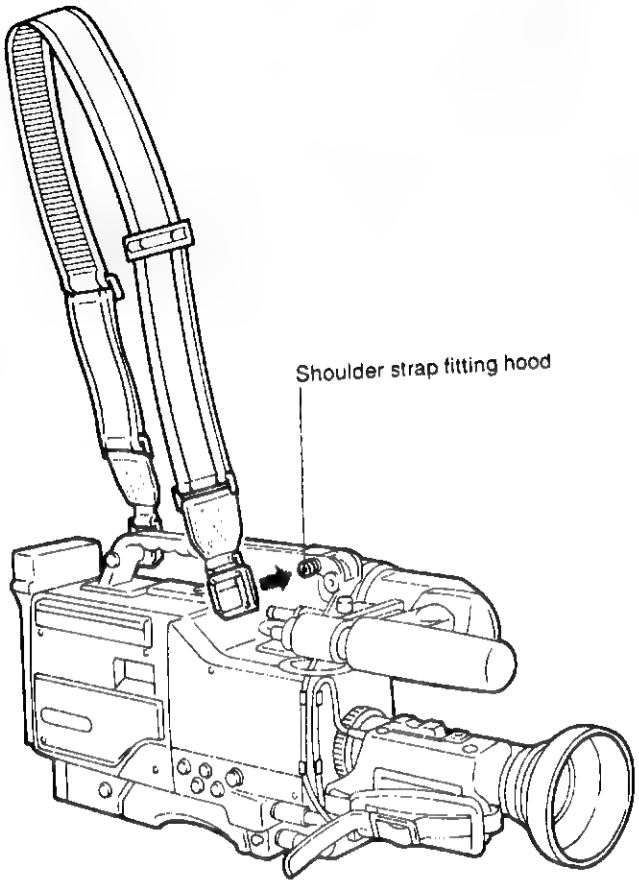
Note

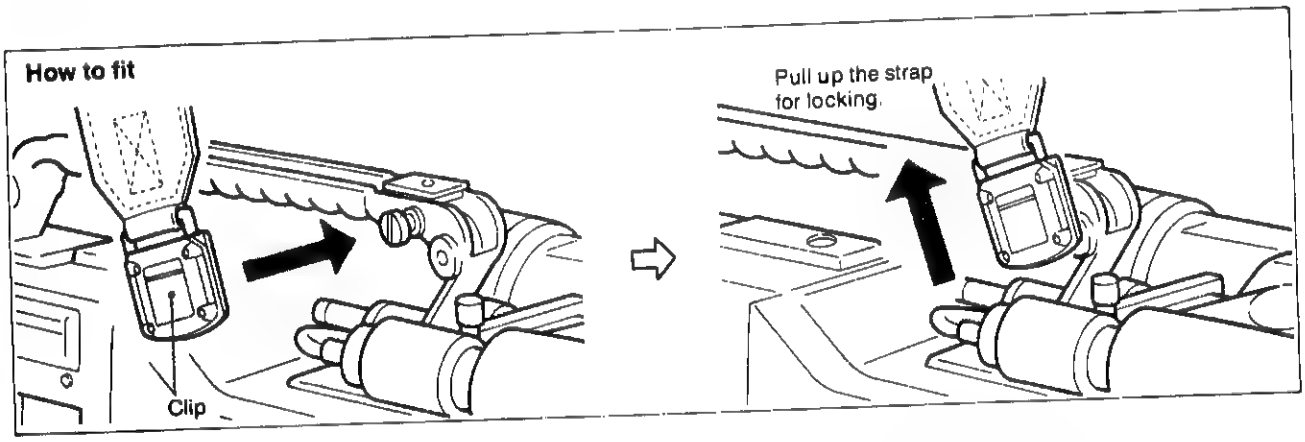
The tripod adaptor pin may remain in the engaged position even after the unit is removed. If this happens, once again press the red button against the lever and move the lever in the direction of the arrow, until the pin returns to its stowed position. If the pin remains in the middle (engaged position) you cannot mount the unit on the tripod adaptor.

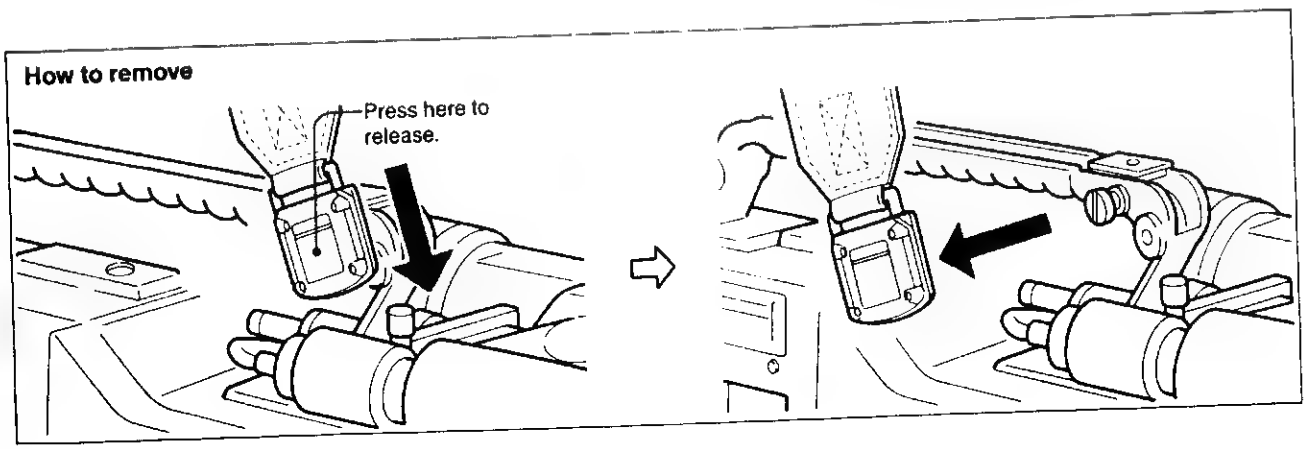


If the pin remains in the middle

3-7 Fitting the Shoulder Strap

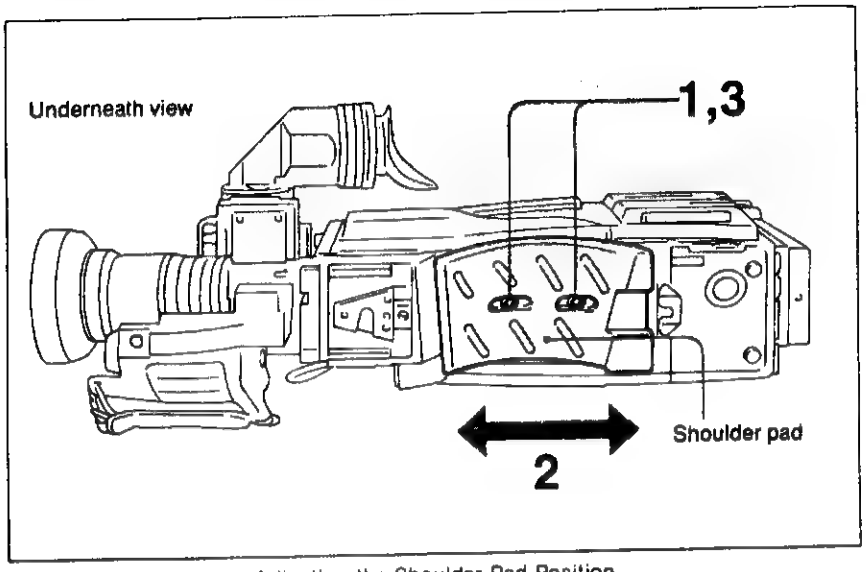






3-8 Adjusting the Shoulder Pad Position

You can shift the shoulder pad from its center position to the front or rear by up to 1 cm (3/8 inches). Use this adjustment to get the best balance for shooting with the camera on your shoulder.



Adjusting the Shoulder Pad Position

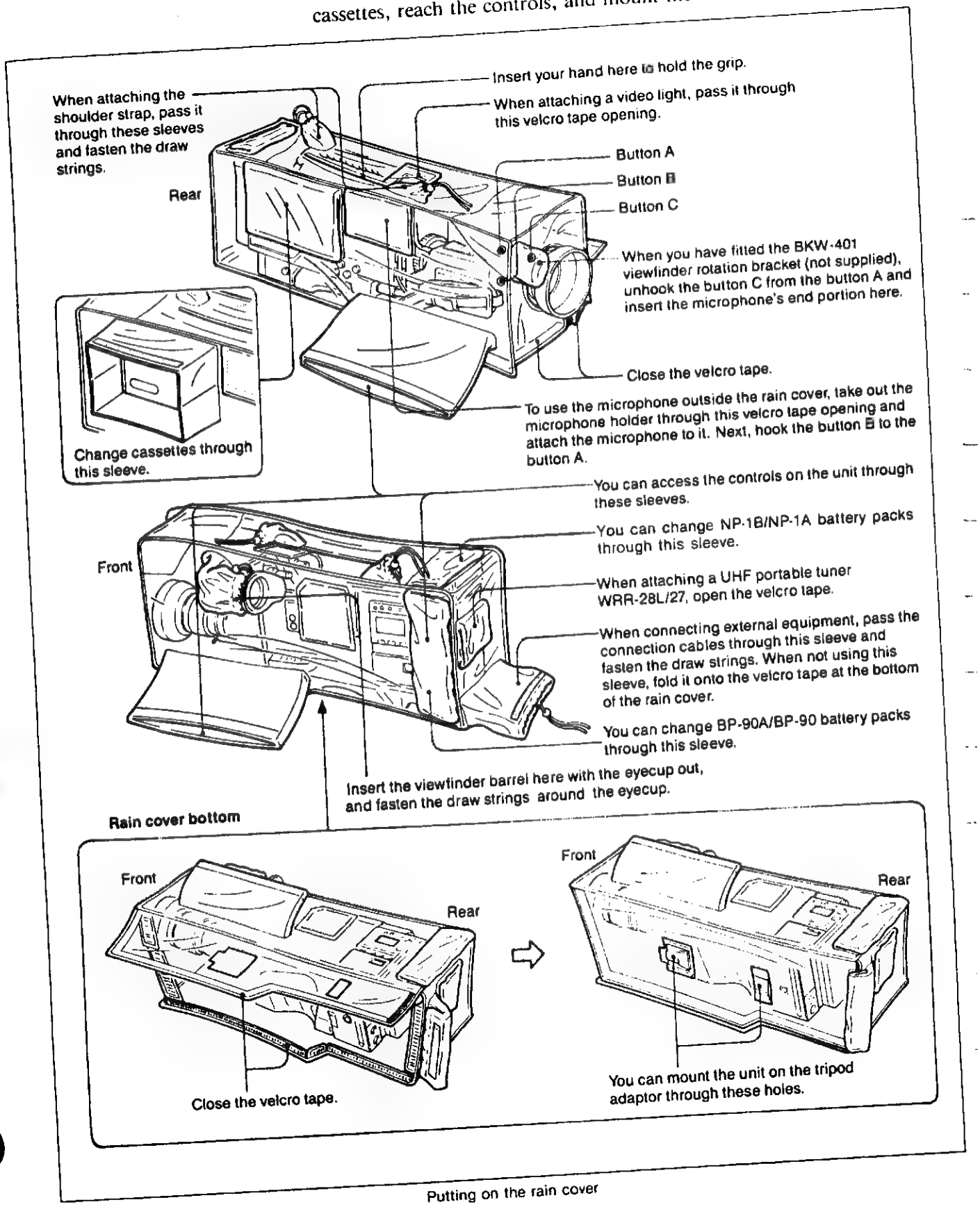
1 Loosen the two screws.

2 Slide the shoulder pad to the front or the rear, until it is in the most convenient position.

3 Tighten the screws.

3-9 Putting on the Rain Cover

Even when you have put the unit in the rain cover, you can change cassettes, reach the controls, and mount the unit on a tripod.

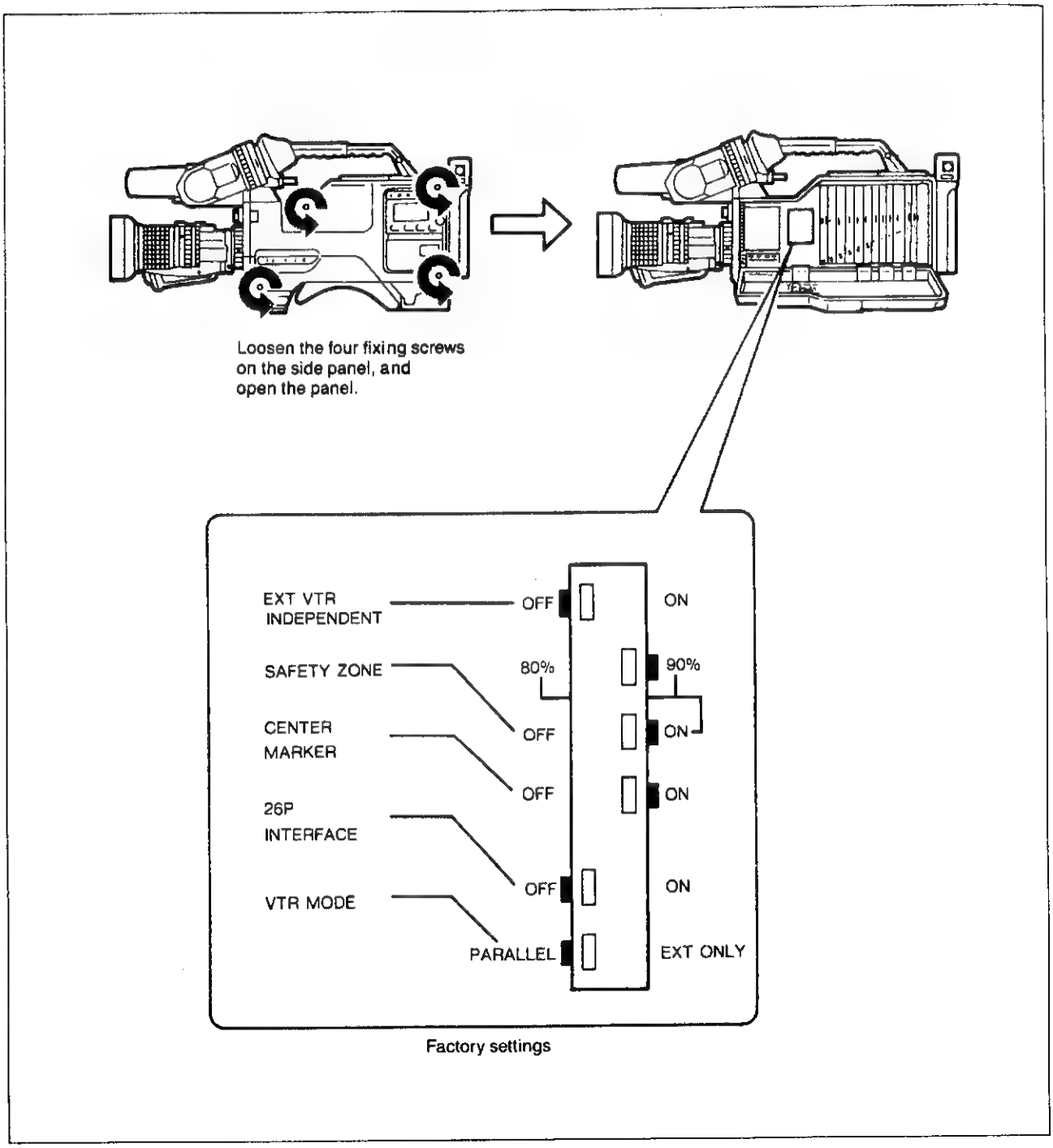


Putting on the rain cover

3-10 Internal Switch Settings for Marker Display and 26-pin Interface Control

The IF-298 board in this unit has switches for controlling the marker display functions and the settings for the 26-pin interface circuit when a BKW-402 VTR connector unit (not supplied) is fitted.

Accessing the switches on the IF-298 board



Switches on the IF-298 board

3-10-1 Marker Display Controls

Safety zone size
The SAFETÀ ZONE 80%/90% switch determines the size of the safety zone marker. This box indicates either 80% or 90% of the total area of the viewfinder screen.

Marker on/off switches
The SAFETY ZONE ON/OFF and CENTER MARKER ON/OFF switches control the display of the safety zone marker and center marker. When set OFF, the particular marker never appears; when ON, display is controlled by the ZEBRA/MARKER switch on the front of the viewfinder.

Using other viewfinders
If you fit a viewfinder such as the BVF-3 3-inch viewfinder, even if the SAFETY ZONE and CENTER MARKER switches are set to ON, the markers will still not appear. To get them on the display, set the MARKER ON/OFF switch on the IF-298 board to ON.

Refer to the maintenance manual for more details.

3-10-2 Controlling the External VTR 26-pin Interface

If a BKW-402 VTR connector unit is attached, with the EXT VTR INDEPENDENT, 26P INTERFACE and VTR MODE switches at their factory settings, you can record simultaneously on the internal VTR and the external VTR connected to the 26-pin interface.
By changing the settings you can control either of the VTRs alone by switches on this unit.
Also, you can get component video or other signals from the 26-pin interface without connecting an external VTR. This allows you to use the unit as an independent component video camera rather than as a VTR camera.
The following table shows the settings and functions of the 26-pin interface control switches.

Settings and functions of 26-pin interface control switches

Switch	Setting	Function
EXT VTR INDEPENDENT	ON	You can control the external VTR independently by its own switches.
	OFF	You can control the external VTR from this unit. With the VTR START button you can control both VTRs together.
26P INTERFACE	ON	The 26-pin interface circuits are on, even if no external VTR is connected, so you can get component video or other signals from the 26-pin interface. If you set the VTR MODE to EXT ONLY, the internal VTR will not operate.
	OFF	Unless an external VTR is connected to the 26-pin interface, the interface circuits are off to save power.
VTR MODE	PARALLEL	With the VTR START button on the unit you can start and stop recording on the internal and external VTRs together. (The REW, F FWD and PLAA buttons leave the external VTR stopped.)
	EXT ONLY	If you connect an external VTR to the 26-pin connector, only the external VTR will operate and the internal VTR not operate.

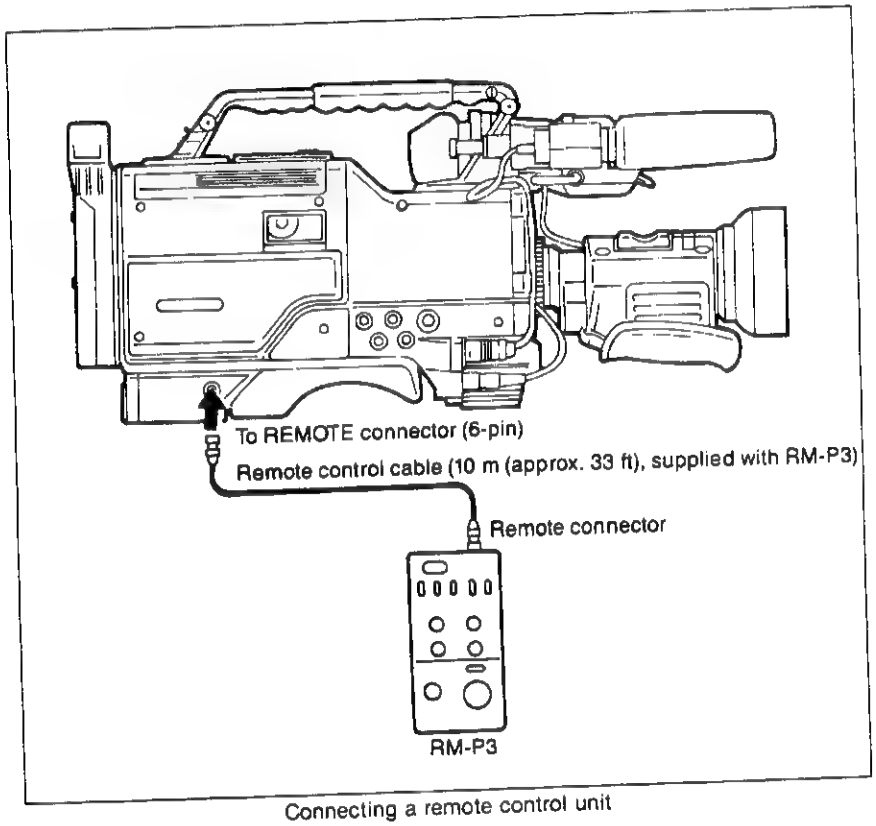
Also read Chapter 7 "Recording on an External VTR".

3-11 Connecting a Remote Control Unit

By connecting an RM-P3 remote control unit (not supplied), you can control the principal camera functions remotely.

Note

Once you connect the RM-P3 to the VTR camera, the camera will remain in the remote control mode even after disconnecting the RM-P3, unless you set the POWER switch of the camera unit to OFF.



Connecting a remote control unit

For details of operation, refer to the operation and maintenance manual for the RM-P3 remote control unit.

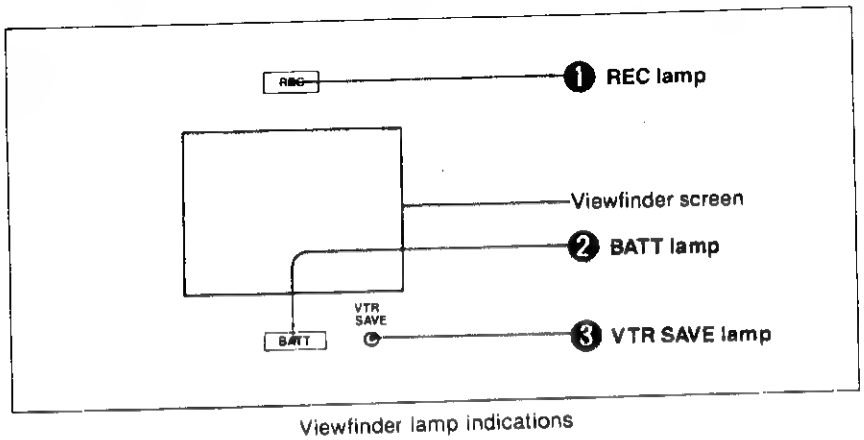
Chapter4
Warnings and Indications in the Viewfinder and Display Panel

This chapter describes and explains the various messages and other indications which appear in the viewfinder or on the display panel.

Note that the viewfinder display while adjusting the black balance or white balance is described in the section "5-1 Adjusting the Black Balance and White Balance"(page 5-1), and the display while adjusting the shutter speed in the section "5-2 Setting the Shutter Speed" (page 5-8).

4-1 Warnings and Indications in the Viewfinder

4-1-1 Lamp Indications



Viewfinder lamp indications

❶ REC (recording) lamp
Lights while recording. Also flashes to indicate a problem.

See "Operation Warnings" (page A-1).

❷ BATT (battery) lamp
Flashes when the battery voltage falls, a few minutes before the power supply fails. When the voltage is too low for the unit to function, this lamp stays on continuously.

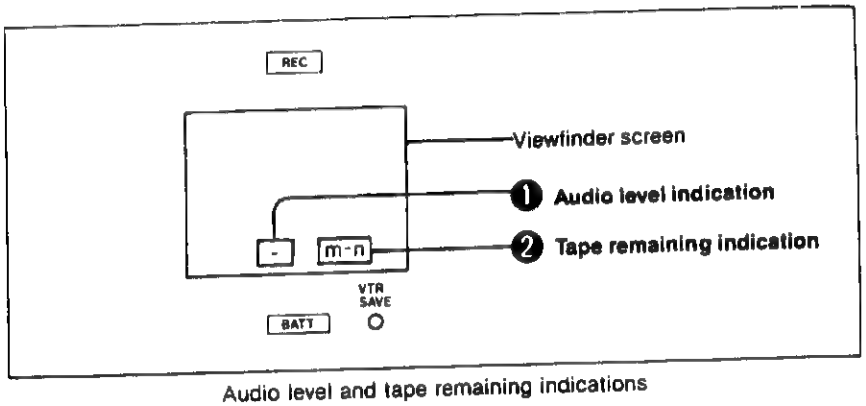
❸ VTR SAVE lamp
Lights when the VTR SAVE/ST.BY switch is set to SAVE, but goes off during recording.

4-1-2 Screen Displays

On the viewfinder screen you can get various pieces of information about audio level, tape remaining time, switch settings, error messages.

Audio Level and Tape Remaining Time Indications

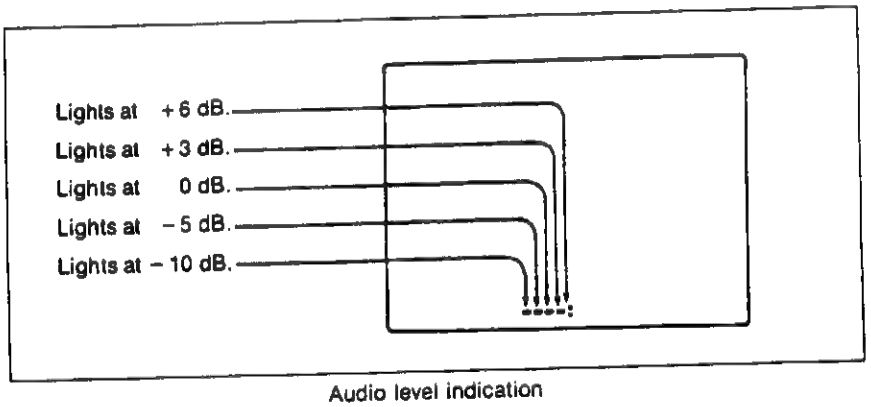
The audio level and tape remaining time indications are switched on and off together by the AUDIO IND switch.



Audio level and tape remaining indications

❶ Audio level indication

Shows the audio level on channel 1, when the AUDIO IND switch is ON.



Audio level indication

❷ Tape remaining indication

Shown during recording, when the AUDIO IND switch is on.

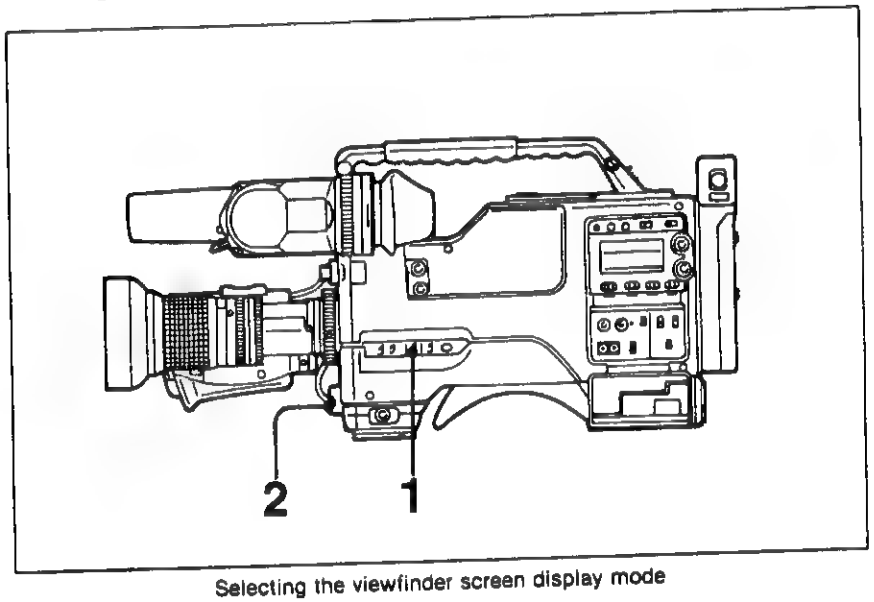
Display (m-n)	Tape time remaining
F-15	Full to 15 minutes
15-10	15 to 10 minutes
10-5	10 to 5 minutes
5-0 continuous	5 to 2 minutes
5-0 flashing	Less than 2 minutes

Switch Settings and Error Message Displays

The viewfinder screen shows various switch settings, error messages, and shutter speed information. There are three display modes, 1, 2 and 3, giving progressively more detailed information.

For details of shutter speed indications see the section "5-2 Setting the Shutter Speed" (page 5-8).

Selecting the display mode



Selecting the viewfinder screen display mode

1 Switch the OUTPUT/DCC switch to BARS.
The color bars appear on the viewfinder screen.

2 Push the AUTO W/B BAL switch to WHT. Each time you push the switch, the display mode changes in the sequence of 1 → 2 → 3 → 1, ...

Once selected, the mode remains the same even when the power is turned off, for at least 10 years, then changes to the preset mode in memory (mode 3).

Switch setting display

The settings of various switches and controls are shown for about 3 seconds after they are changed. Immediately after powering on the unit, the OUTPUT/DCC switch and WHITE BAL switch settings are also shown for about 3 seconds. The following table shows which items are displayed for each mode setting.

D: Displayed N: Not displayed

Switch or control	Setting display	Display mode		
		1	2	3
GAIN switch	GAIN: 0 dB (9 dB, 18 dB)	D	D	D
OUTPUT/DCC switch	DCC: ON (OFF)	D	D	D
FILTER selector	FILTER: 1 (2, 3, 4)	D	D	D
	WHITE: PRESET (A-CH, B-CH)	D	D	D
	□, □ K (color temperature)*	N	D	D
WHITE BAL switch	WHITE: PRESET (A-CH, B-CH)**	D	D	D
	□, □ K (color temperature)*	N	D	D

* Color temperatures are shown approximately in units of 1000 K.

** When using an RM-P3 remote control unit, the display is as follows:

The setting of the W/B AUTO/MANU switch on the RM-P3	The setting of the WHITE BAL switch of the BVW-300A/300AP	Display
AUTO	A	"WHITE: A"
	PRST	"WHITE: A"
	B	"WHITE: B"
MANU		"W/B: MANUAL"

Error message displays

The following error messages are displayed, again depending on the display mode setting.

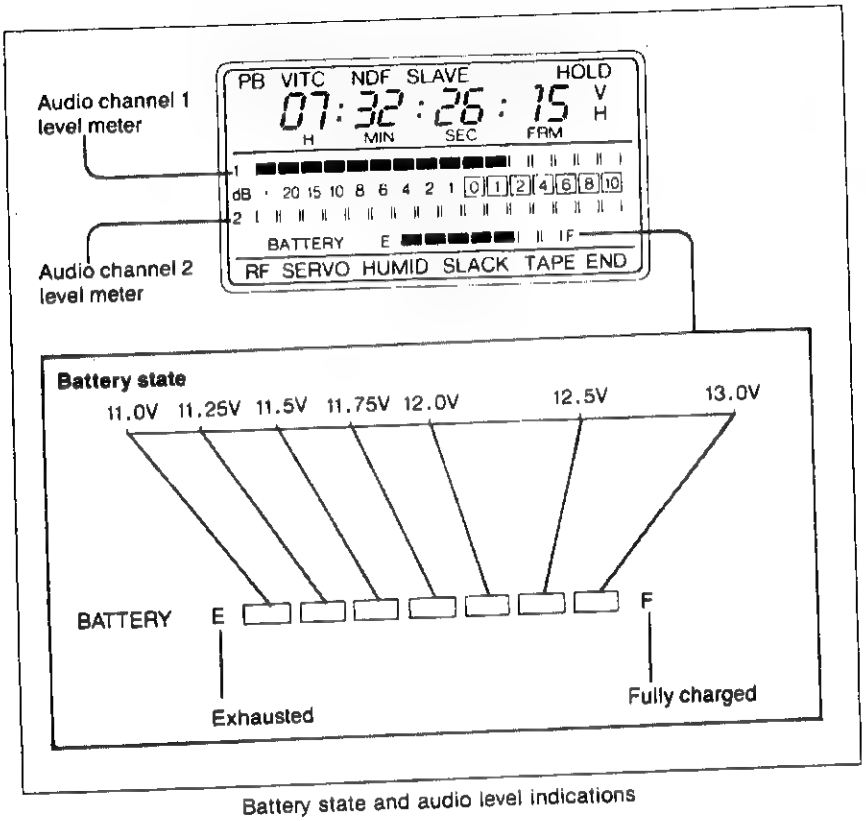
D: Displayed N: Not displayed

Display	Meaning and necessary action	Display mode		
		1	2	3
: MEMORY NG (Colon flashing)	Black balance and white balance memory values have reverted to PRST. Try again adjusting operation. If the result is the same, contact your Sony representative.	D	D	D
: LOW LIGHT (colon flashing)	Insufficient light; image level not up to standard value. Open the iris. If the result is the same, increase the gain.	N	N	D
MONITOR MODE	Internal switch setting is such that the camera section outputs only the green channel signal, instead of the Y signal, to the VIDEO OUT connectors and the VTR section. On how to exit from the MONITOR MODE, refer to the maintenance manual.	D	D	D

4-2 Warnings and Indications in the Display Panel

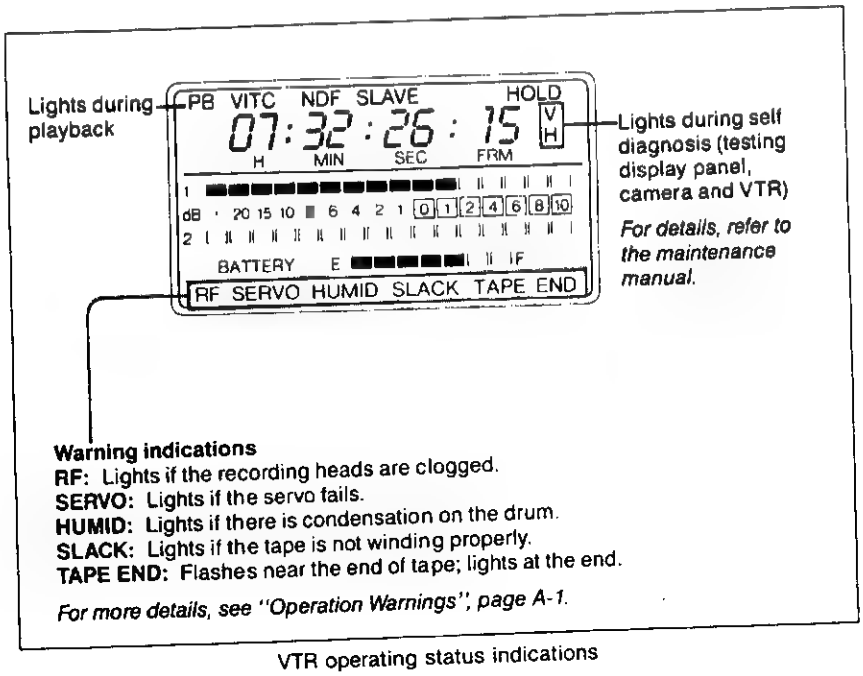
The display panel shows battery state, audio level, VTR status indications and time data.

Battery State and Audio Level Indications



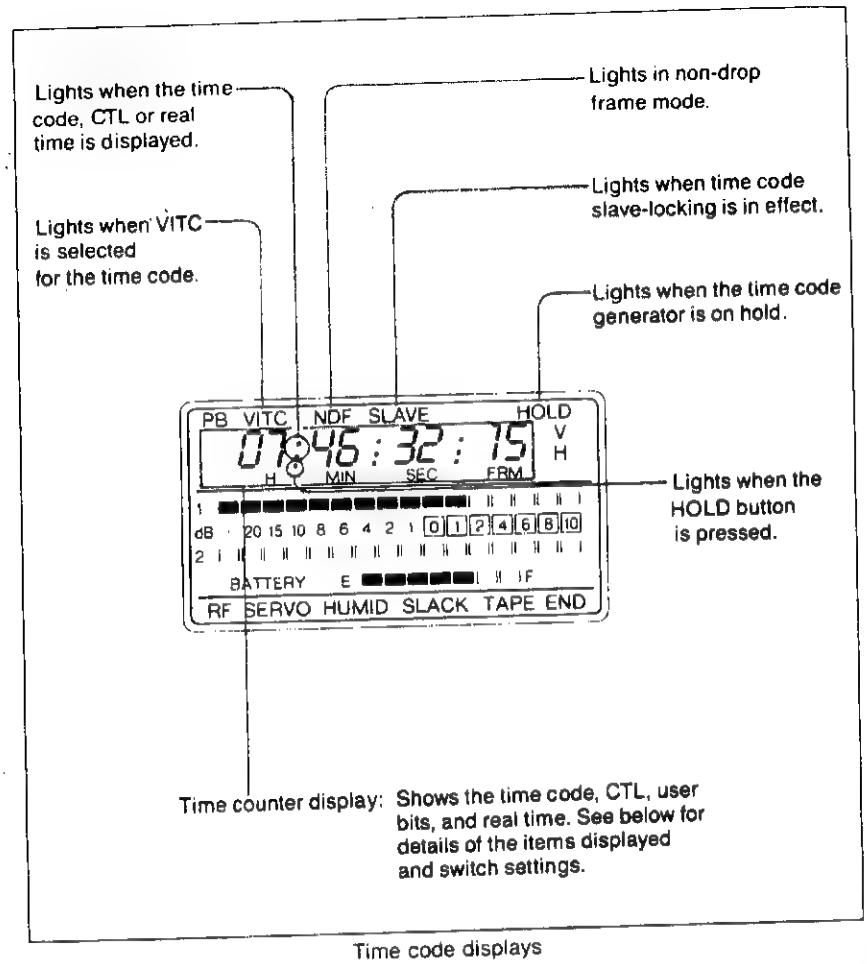
Battery state and audio level indications

VTR Operating Status Indications



VTR operating status indications

Time Code Displays



Time code displays

Relation between switch settings and displays

The REAL TIME, F-RUN/R-RUN and DISPLAY switches, in that order of priority, determine the value displayed by the time counter.

REAL TIME switch setting	F-RUN/R-RUN switch setting	DISPLAY switch setting	Item shown
SET	Anything	Anything	Real time
ON or OFF	SET	TC or CTL	Time code
		U-BIT	User bits
	F-RUN or R-RUN	CTL	CTL
		TC	Time code
		U-BIT	User bits

Chapter 5
Adjustments and Settings for Recording

This chapter describes the adjustments of the black balance and white balance, shutter speed, and audio level, which are essential for high quality recording. It also discusses setting the time data to enable easy scene indexing for playback and editing.

5-1 Adjusting the Black Balance and White Balance

Adjust the black balance only in the following cases:

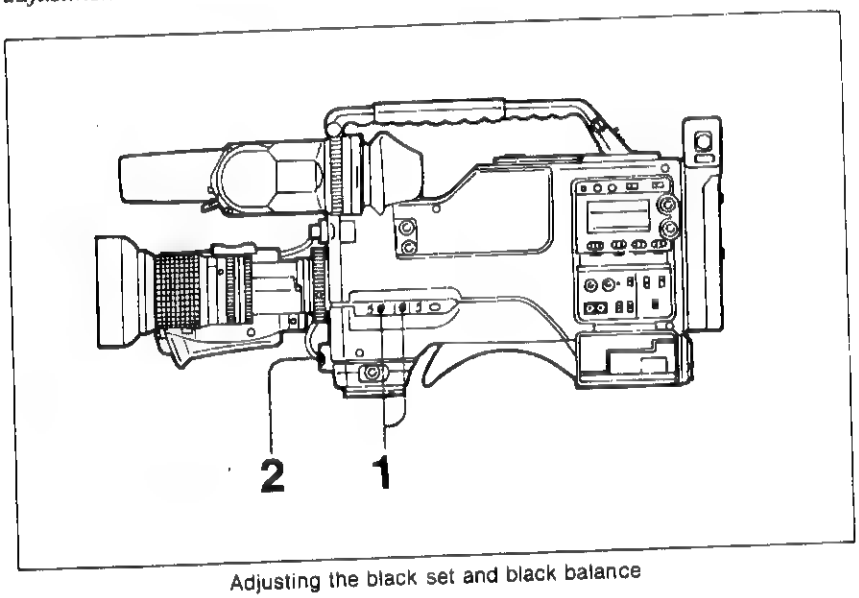
- When using the unit for the first time, or after a long period without using it.
- When using the unit after the temperature has changed dramatically.

The black balance setting is preserved even when the power is turned off, and it is not normally necessary to readjust it. On the other hand, adjust the white balance each time the lighting condition (or the color temperature of the object you want to shoot) changes.

5-1-1 Adjusting the Black Balance

You can adjust the black balance automatically by using the AUTO W/B BAL switch, or manually on an internal circuit board.
In automatic black balance adjusting mode, the unit first adjusts the black set, and then the black balance.

Refer to the maintenance manual for details of manual black balance adjustment.

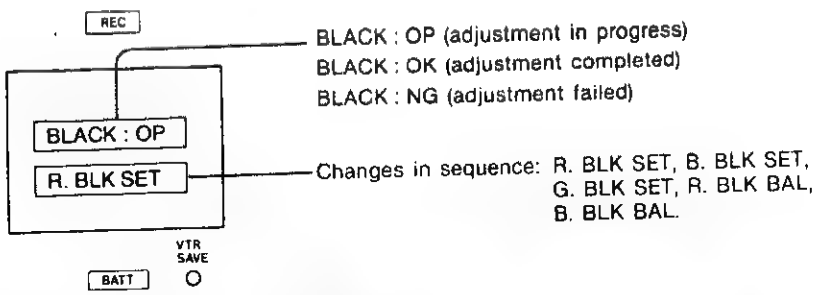


Adjusting the black set and black balance

1 Set the GAIN selector to 0 and OUTPUT/DCC selector to CAM.

2 Push the AUTO W/B BAL switch to BLK.
The switch automatically returns to the center position when you take your finger away.

While the adjustment is in progress, the following viewfinder display appears:



Notes

- The camera automatically closes the lens iris before you start the adjustment. If the lens is set to manual iris adjustment, you will need to open the iris manually after the adjustment is completed.
- During the adjustment the gain switching circuit is automatically activated several times, so you may see flicker in the viewfinder or in the monitor. This is not a fault.

Black Balance Adjustment Errors

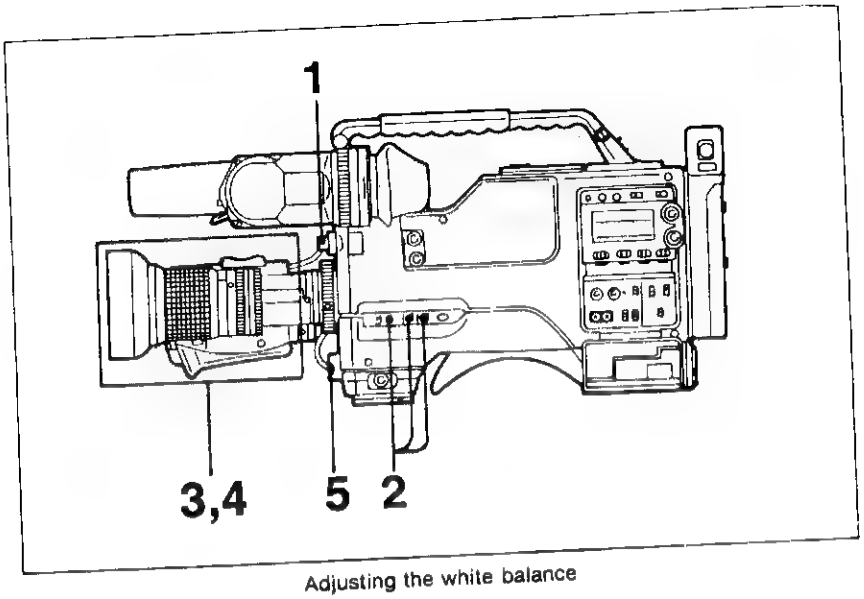
When the message "BLACK:NG" appears in the viewfinder, one of the following messages also appears. Take appropriate action, then try the adjustment again.

Display	Cause of failure
HARD ERROR TRY AGAIN	Black balance voltage could not be achieved.
OVERFLOW TRY AGAIN	Difference between standard value and current value is too large; outside adjustment range.
TIME LIMIT TRY AGAIN	Adjustment could not be made within the standard number of attempts.
IRIS: NOT CLOSED TRY AGAIN	The lens iris did not close.
BOUNCING: TOO LONG TRY AGAIN	Black set adjustment could not be made within the standard time limit.

Black Balance Memory

The memory is a non-volatile EEPROM, so the setting will be held for a long time (about 10 years).

5-1-2 Adjusting the White Balance



Adjusting the white balance

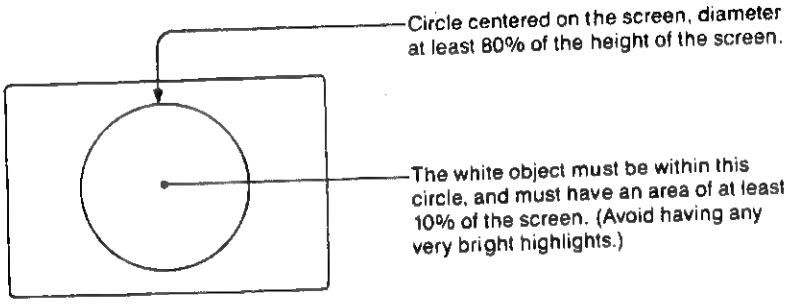
1 Select the FILTER setting to correspond to the illumination.

Selector position	Color temperature, ND	Shooting conditions
1	3200 K	Sunrise and sunset; studio
2	5600 K + 1/4 ND	Outdoors, clear skies
3	5600 K	Outdoors, cloud or rain
4	5600 K + 1/16 ND	Very bright conditions: snow, high altitudes, or seaside

2 Set the switches as follows :
GAIN switch: 0
OUTPUT/DCC selector: CAM
WHITE BAL selector: A or B

3 Place a white test card in the same lighting conditions as the subject to be shot, and zoom it up.

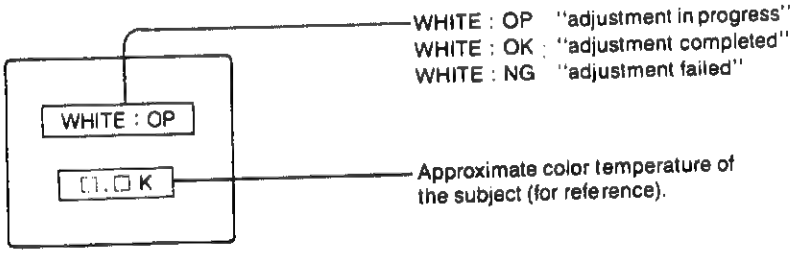
Alternatively, you can use any white object, such as a cloth or wall, near the subject. The absolute minimum white area is shown in the following diagram.



4 If the iris is set to manual adjustment, adjust it appropriately. If the lens has an automatic iris, set the iris adjustment switch to automatic.

5 Push the AUTO W/B BAL switch to WHT.

While the adjustment is in progress, the following viewfinder display appears:



The white balance adjustment takes a few seconds, and then the adjustment settings are automatically stored in the memory (A or B) selected with the WHITE BAL selector in step **2**.

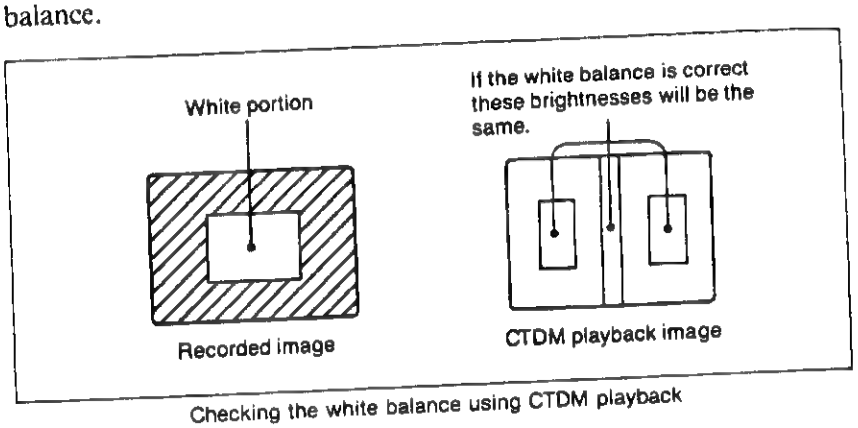
Note

If the camera has a zoom lens with automatic iris, the iris may hunt during adjustment. To prevent this, turn the gain control (marked IG, IS or S) on the iris to minimum.

For more details, refer to the manual supplied with the lens.

Checking White Balance Recorded on the Tape

Provided that there is sufficient white area recorded on the tape, you can check the white balance by means of CTDM playback. Press the PLAY button to start playback, then press the CTDM button. While the CTDM button is pressed you can check the white balance.



Checking the white balance using CTDM playback

White Balance Adjustment Errors

When the message "WHITE:NG" appears in the viewfinder, one of the following messages also appears. Take appropriate action, then try the adjustment again.

Display	Cause of failure
LOW LEVEL TRY AGAIN	The video level was too low. Either make the illumination brighter, or increase the setting of the GAIN switch.
HARD ERROR TRY AGAIN	White balance voltage could not be achieved.
TIME LIMIT TRY AGAIN	Adjustment could not be made within the standard number of attempts.
C.TEMP.LOW CHG. FILTER TRY AGAIN	The color temperature was too low. Change the FILTER selector setting.
C.TEMP.HIGH CHG. FILTER TRY AGAIN	The color temperature was too high. Change the FILTER selector setting.

When There Is No Time for White Balance Adjusting Operation

You can use the factory preset 3200 K or 5600 K white balance by setting the WHITE BAL selector to PRESET. Set the FILTER selector to the position 1 for the preset 3200 K white balance, and the position 2, 3, or 4 for 5600 K.

White Balance Memory

Two separate memories A and B are provided for the white balance values on each of the filter settings. (4 filters × 2 memories = total 8 values stored.)

Changing the number of memories

By changing switch settings on the internal board, you can set the memories so that there is only one for each of settings A and B; in other words, the memory value is unrelated to the filter setting.

For more details, refer to the maintenance manual.

5-2 Setting the Shutter Speed

Shutter Speed Selection Range

The shutter speed has six settings (in sec.), which are selected in the following order:

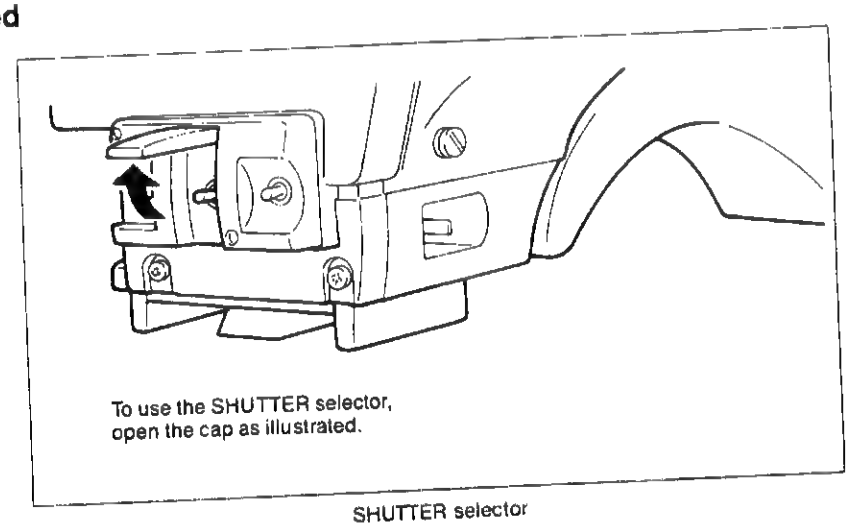
$\rightarrow$ $\frac{1}{100}$ (BVW-300A), $\frac{1}{60}$ (BVW-300AP) $\rightarrow$
$\frac{1}{2000} \leftarrow \frac{1}{1000} \leftarrow \frac{1}{500} \leftarrow \frac{1}{250} \leftarrow \frac{1}{125} \leftarrow$

When using the automatic iris, the iris opens as the shutter speed increases, thus reducing the depth of field.
When the power is turned off, the shutter speed setting is retained for 10 years, and then it reverts to $\frac{1}{100}$ (BVW-300A) or $\frac{1}{60}$ (BVW-300AP) for initialization.

Note

In artificial light, particularly from fluorescent lamps or mercury lamps, even though the light intensity may appear to be constant, it actually is changing at the frequency of the power supply ("flicker"). If you use the electronic shutter under such lighting, it may make the flicker worse. With the BVW-300A (or BVW-300AP), if the local power supply is 50 Hz (or 60 Hz), you can reduce flicker by setting the shutter speed to $\frac{1}{100}$ (or $\frac{1}{60}$).

To Display the Shutter Speed



To use the SHUTTER selector, open the cap as illustrated.

SHUTTER selector

When you select the display mode 3 and set the AUDIO IND switch to OFF, the current shutter speed always appears on the viewfinder screen.
In other cases, move the SHUTTER selector from OFF to ON. The shutter speed will appear in the viewfinder for about three seconds regardless of the viewfinder display mode setting. The shutter speed also appears when you change the shutter speed.

Changing the Shutter Speed

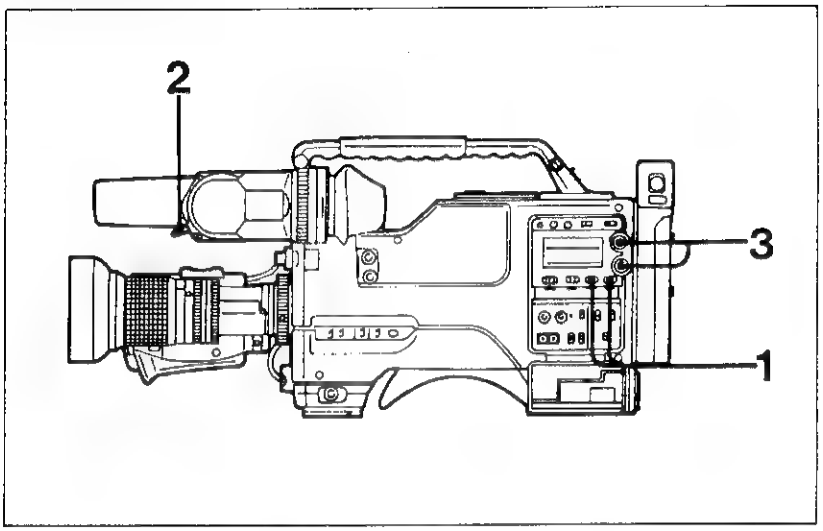
1 Push the SHUTTER selector from ON to SEL.
The current shutter speed will appear in the viewfinder screen.
Example : SS : $\frac{1}{250}$

2 While the colon to the left of "SS" is on, push the selector again to SEL. Each time you do this, the shutter speed will step to the next value, which will be shown for about 3 seconds.

Note
After the colon to the left of "SS" disappears, pushing the shutter selector to SEL will have no effect. Try again the procedure from step **1**, after the whole shutter speed display has disappeared.

5-3 Adjusting the Audio Level

If you set the AUDIO SELECT switch for channel 1 or channel 2 to AUTO, the input level for the corresponding channel is adjusted automatically.
Use the following procedure for manual adjustment of the level for either audio channel.



Audio level manual adjustment

1 Set the AUDIO SELECT CH-1 and CH-2 switches to MAN.

2 Turn the AUDIO LEVEL CH-1 control for channel 1 on the front of the viewfinder fully clockwise.

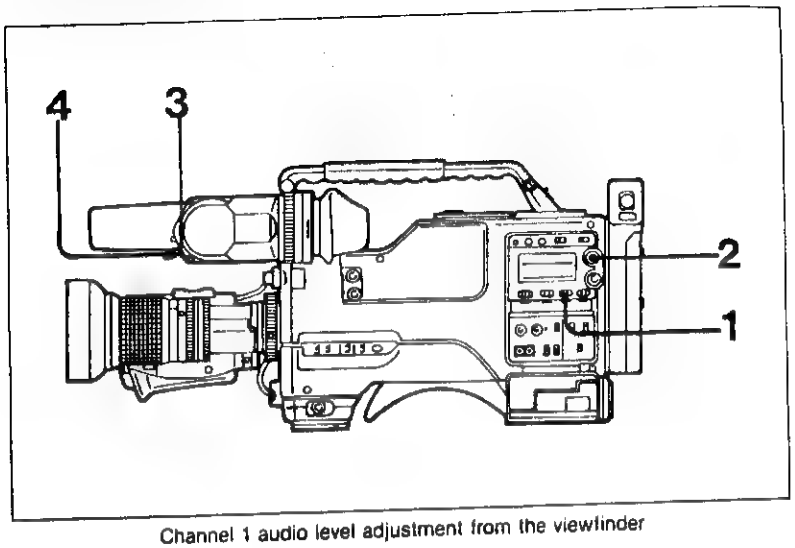
3 Turn the AUDIO LEVEL CH-1 and CH-2 controls, so that at the maximum sound level the level meter indicates +8 dB.

Limiter circuit
When you adjust the audio level manually, excessive audio input levels will activate a limiter circuit, which will attenuate a +30 dB input signal to about +10 dB.

AFM recording
Using metal tape, the audio signals recorded on the longitudinal tracks (normal audio tracks) are also recorded on the chrominance track in AFM mode.

Adjusting the Audio Level of Channel 1 from the Front of the Viewfinder

You can adjust the audio level for channel 1 while looking in the viewfinder, by using the AUDIO LEVEL CH-1 control on the front of the viewfinder.



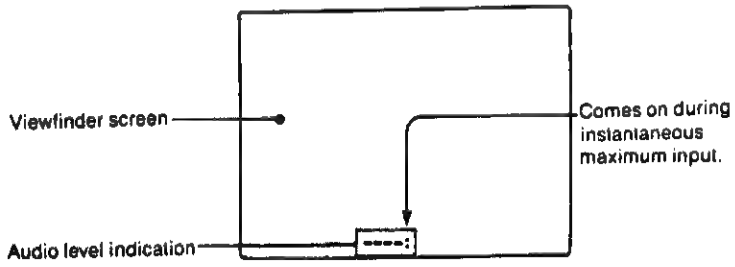
Channel 1 audio level adjustment from the viewfinder

1 Set the AUDIO SELECT CH-1 switch to MAN.

2 Turn the AUDIO LEVEL CH-1 control on the side panel fully clockwise.

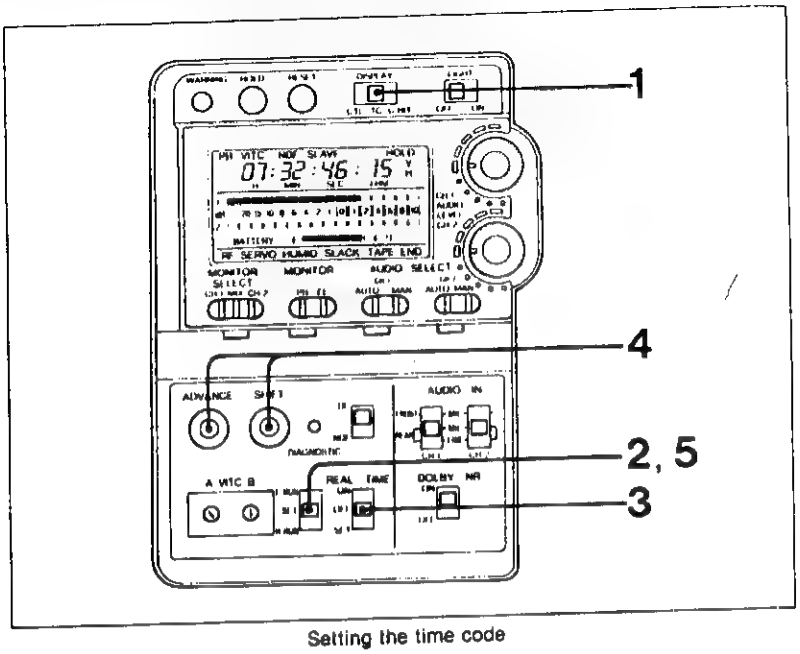
3 Turn the AUDIO IND switch on the front of the viewfinder to ON. The audio level indication will appear in the viewfinder.

4 Turn the AUDIO LEVEL CH-1 control on the front until the colon at the right end of the audio level display comes on when the sound input is maximum.



5-4-1 Setting the Time Code

If you are using both the time code and the user bits, do the user bit settings first. If you set the time code first, the time code generator stops while the user bit settings are done, so the time code stops while the user bit settings are done, so the time code will not be correct. The time code setting range is from 00:00:00:00 to 23:59:59:29 (for BVW-300A) or to 23:59:59:24 (for BVW-300AP).



Setting the time code

1 Set the DISPLAY switch to TC.

2 Set the F-RUN/R-RUN switch to SET.

3 Set the REAL TIME switch to ON or OFF.

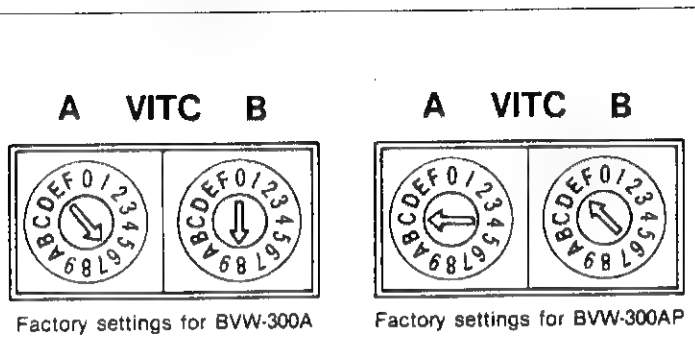
4 Set the time code, using the SHIFT and ADVANCE buttons.
SHIFT button: Selects digit to set. Each time you press it, the flashing column moves one to the right.
ADVANCE button: Increments the flashing digit.

5 Set the F-RUN/R-RUN switch to F-RUN or R-RUN.
F-RUN: Free running—time code constantly advancing.
R-RUN: Record running—time code stops except when recording.

What happens to the time code when the battery is changed?
When you change batteries, a back-up function ensures that the time code generator keeps running (for about 5 years).

Choosing the Lines to Insert the VITC

There are two independent VITC switches, A and B, which allow you to select two different lines in which to record the time code.



Factory settings for BVW-300A

Factory settings for BVW-300AP

Insert the tip of a fine-bladed screwdriver into the slot, and turn the switch to the hexadecimal digit for the desired line as in the table below. Make sure that the switch clicks properly into position.

VITC switches

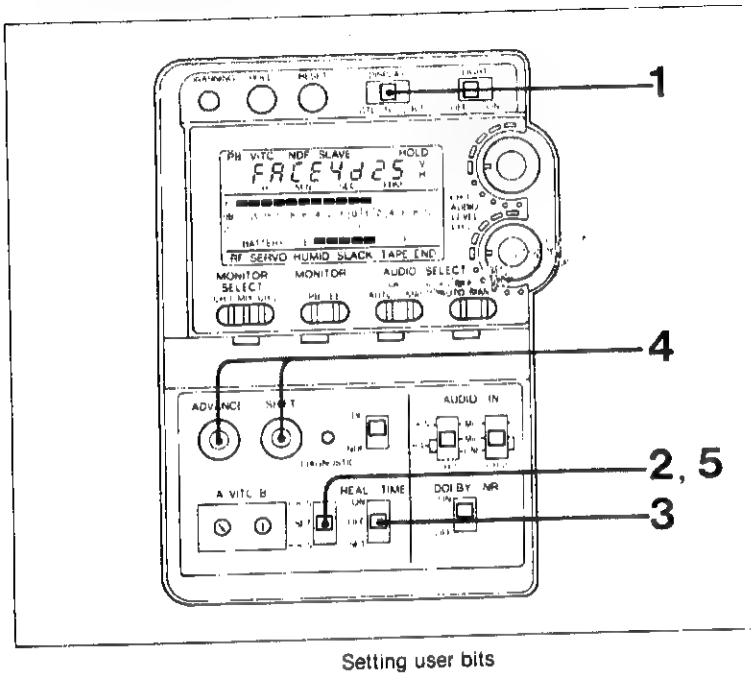
VITC recording line number (BVW-300A)	Switch position	VITC recording line number (BVW-300AP)
10	0 or 1	7
12	2	9
13	3	10
14	4	11
15	5	12
16	6	13
17	7	17
18	8	15
19	9	16
20	A	17
21	B	18
22	C	19
23	D	20
24	E	21
25	F	22

Note

Choose a line for the VITC recording that is not already being used for Vertical Interval Test Signal (VITS), Vertical Interval Reference Signal (VIRS) or Vertical Interval Sub-Carrier(VISC).

5-4-2 Setting User Bits

By setting the user bits (up to 8 digits in hexadecimal), you can record user information such as the date, time or scene number, on the time code track.



Setting user bits

1 Set the DISPLAY switch to U-BIT.

2 Set the F-RUN/R-RUN switch to SET.

3 Set the REAL TIME switch to OFF.

4 Set the user bits, using the SHIFT and ADVANCE buttons.
SHIFT button: Selects digit to set. Each time you press it, the flashing column moves one to the right.
ADVANCE button: Increments the flashing digit.

Hexadecimal digits A to F are displayed as follows:

Hexadecimal	A	B	C	D	E	F
Display	*A*	*b*	*C*	*d*	*E*	*F*

5 Set the F-RUN/R-RUN switch to F-RUN or R-RUN. The specified user bits will be recorded in LTC and VITC.

User bit retention in memory

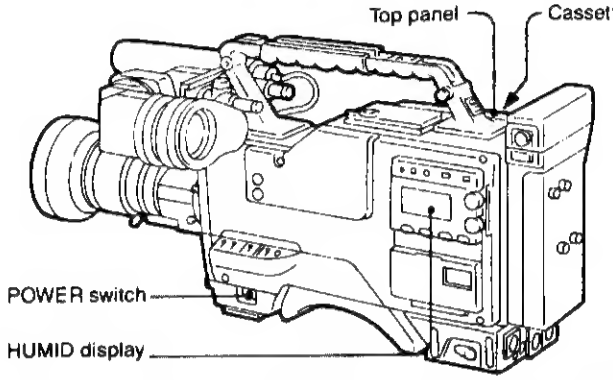
The user bit setting (apart from the real time) is retained in memory when the power is turned off. Note, though, that the value will not be retained if less than 20 seconds has elapsed from the time you turn the power on to the time you turn it off after making the setting.

See "Specifications" (page A-12) for details of the cassettes you can use in this unit.

6-1-1 Loading and Unloading Cassettes

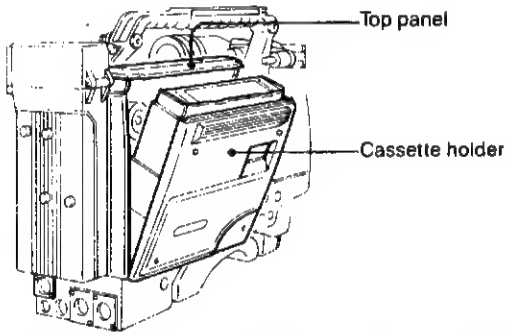
Loading

1 Check that there is nothing obstructive (such as cables) around the top panel and cassette holder, then turn the POWER switch ON.

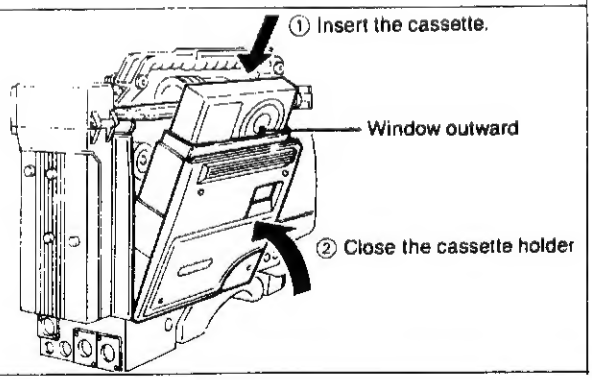


If there is internal condensation, the display will show HUMID warning. In this case, wait until the HUMID warning has gone off before proceeding to step 2.

2 Press the EJECT button. The top panel will rise, and the cassette holder will open.

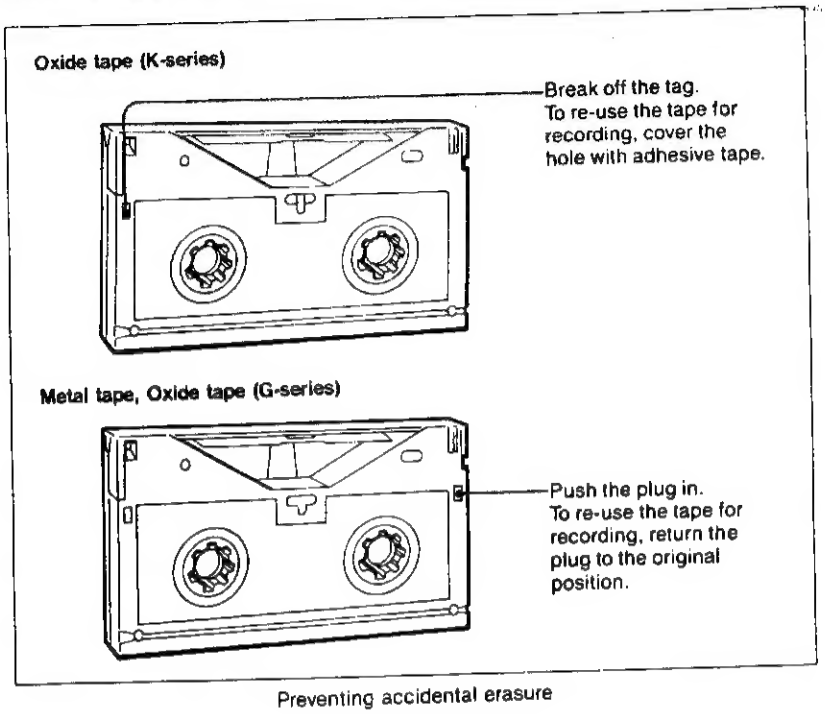


3 Check that there is no slack in the tape (see next page), then insert the cassette and close the cassette holder. The top panel will go down.



6-1-2 Preventing Accidental Erasure

The following procedures prevent the cassette tape from being re-recorded inadvertently.

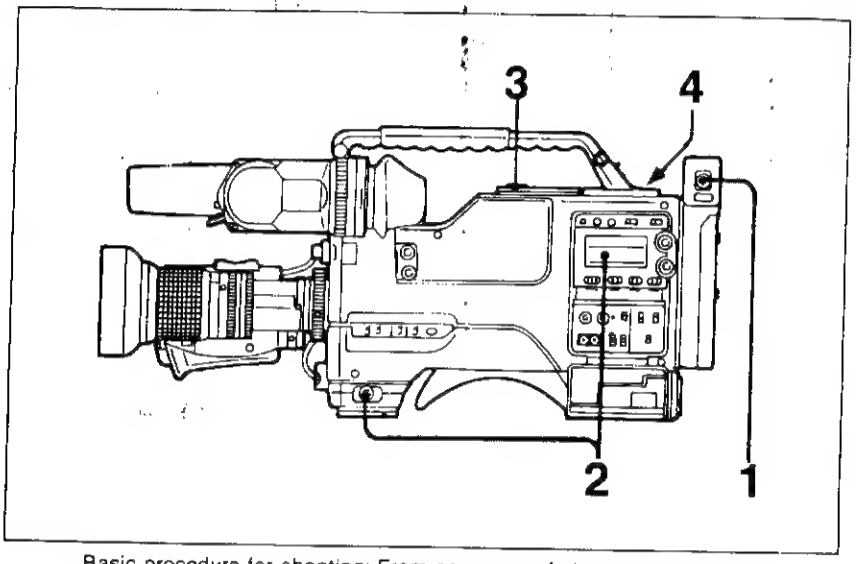


Preventing accidental erasure

6-2-1 Basic Procedure

This section describes the basic procedure for shooting and recording. Before a shooting session, carry out the checks listed in the section "Testing the Unit before Shooting" (page A-3) to ensure the unit is functioning properly.

Powering On and Loading a Cassette



Basic procedure for shooting: From power supply to cassette loading

1 Load a fully charged battery pack.

2 Set the POWER switch to ON, and check that the HUMID warning has not appeared and that the battery indicator has at least five segments on.
- If the HUMID warning has appeared, wait until it disappears.
- If the battery indicator does not have at least five segments on, replace the battery pack with a fully charged one.

3 Check that there are no cables or anything else obstructing the cassette holder or top panel, then press the EJECT button to open the cassette holder.

4 Load the cassette, after checking the points below, then close the cassette holder.
- The cassette is not set to inhibit recording.
- There is no slack in the tape.